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**UNITED STATES ARMY RESERVE
IN
OPERATION DESERT STORM**

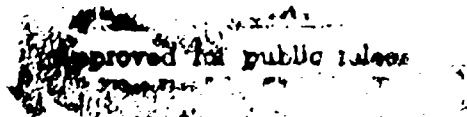


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Reservists of the Army Medical Department

Adding Value to the Total Force and to the Nation

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE 23 SEPTEMBER 1993		3. REPORT TYPE AND DATES COVERED FINAL	
4. TITLE AND SUBTITLE UNITED STATES ARMY RESERVE IN OPERATION DESERT STORM: RESERVISTS OF THE ARMY MEDICAL DEPARTMENT				5. FUNDING NUMBERS	
6. AUTHOR(S) JOHN R. BRINKERHOFF, TED SILVA, JOHN SEITZ					
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) ANDRULIS RESEARCH CORPORATION 2121 CRYSTAL DRIVE ARLINGTON, VIRGINIA				8. PERFORMING ORGANIZATION REPORT NUMBER CONTRACT NUMBER: MDA 903-90-D-0033	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) HQDA ATTN: DAAR-PAE 2400 ARMY PENTAGON WASHINGTON, DC 20310-2400				10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES					
12a. DISTRIBUTION/AVAILABILITY STATEMENT APPROVED FOR PUBLIC RELEASE: DISTRIBUTION IS UNLIMITED.				12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words)					
14. SUBJECT TERMS				15. NUMBER OF PAGES	
				16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED		18. SECURITY CLASSIFICATION OF THIS PAGE UNCLASSIFIED		19. SECURITY CLASSIFICATION OF ABSTRACT N/A	
				20. LIMITATION OF ABSTRACT N/A	



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FOREWORD

This is one in a series of monographs describing and assessing the role of the United States Army Reserve in winning the war in the Persian Gulf. Countless reports have been written and numerous books published about the Coalition victory. But, none have appeared that focus on the Army Reserve's Citizen Soldiers and their valuable contributions to the favorable outcome of the conflict. This monograph, and the remainder of the series, fills that void.

This report on the role of the Army Reserve in medical support during Operation DESERT SHIELD and DESERT STORM highlights the unique capabilities of these Army Reservists and focuses specifically on the activation, deployment, and employment of the units and individuals of the Army Medical Department. The report discusses the role of Army Reserve medical personnel representing the full range of medical specialty fields. The report deals with the employment of USAR AMEDD soldiers in all theaters - CONUS, the Persian Gulf, and Europe. This is a report of the successful employment of a capability that resides primarily within the Army Reserve.

Other monographs in this series describe the roles of a variety of Army Reserve units and individual soldiers. They include military police, civil affairs, engineers, trainers, transporters, communicators, infantrymen, and strategic intelligence units. Additional monographs will address garrisons, trainers, and other areas where the Army Reservists made a significant contribution to the Coalition Forces victory.

Your comments on this and future issuances are welcome.

FOR THE CHIEF, ARMY RESERVE

GEORGE S. DODGE
Colonel, General Staff
Chief, Program Analysis and
Evaluation Division

**UNITED STATES ARMY RESERVE
in
OPERATION DESERT STORM**

Reservists of the Army Medical Department

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Contract Number: MDA 903-90-D-0033, Delivery Order 1

Name of Contractor: ANDRULIS Research Corporation

Contract Project Director and Phone Number: John Seitz, (703) 521-0671

Government Sponsor: OCAR PA&E, LTC Samuel A. McNabb, COR

23 September 1993

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in
OPERATION DESERT STORM

Reservists of the Army Medical Department

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Reservists of the Army Medical Department

The Saga of the 3297th Army Hospital

On 30 August 1990, the 3297th Army Hospital, located in Chamblee, Georgia, just a few miles Northeast of Atlanta, was called to active duty for Operation DESERT SHIELD. The mission of the 3297th was to fill the Mobilization TDA authorizations at the Dwight D. Eisenhower Army Medical Center at Fort Gordon, Georgia. As an augmentation hospital, the 3297th Army Hospital, and others in the Army Reserve structure like it, was perfect as a pool of skilled medical personnel to fill requirements of the hospital it augmented. The 900 members of the 3297th assembled at their Reserve Centers and received the first of several surprises that would be in store for them for the next eight months. Contrary to their expectations, all 900 members would not report to Eisenhower Medical Center; only 611 medical personnel and medical records specialists, about three-quarters of the unit would be going, having been activated under a derivative UIC. The others were not needed at Eisenhower. The home station for the headquarters and most of the unit is at Chamblee, Georgia, but there are also detachments at Orlando, Florida and Charlotte, North Carolina.

President Bush's decision on 7 August 1990 to commit US military forces to defend Saudi Arabia triggered a preplanned response in the Army, so that Active Component medical personnel--physicians, nurses, and technicians--at the fixed hospitals in the Continental United States (CONUS) were ordered to report to the TOE medical units to which they had been pre-assigned and prepare for deployment to the Persian Gulf. The 3297th Army Hospital is one of 24 TDA hospital units formed specifically to augment the CONUS fixed medical facilities in this situation.¹

The mobilized personnel of the 3297th Hospital reporting to Eisenhower in the first week of September 1990 found that the preparations to receive them were not adequate. There was insufficient housing, and medical corps colonels and lieutenant colonels found themselves billeted in open bays of old school buildings, and in response to their complaints were told "This is war." They also found that some of them were not needed at Fort Gordon and would serve at other locations.

For example, Sergeant First Class Mary Ann Ruthrauff, a licensed practical nurse on Active Guard/Reserve (AGR) status, wound up at Fort Bliss, Texas. After 5 days at

Eisenhower, she and an officer nurse and 14 other enlisted personnel were reassigned, told to drive to their new post, and despite the urgency of the situation, allowed 14 days leave en route. Upon arrival at Fort Bliss, SFC Ruthrauff and other NCOs had to find housing off post because the authorities at Bliss did not want senior NCOs to live in the barracks. SFC Ruthrauff and two other NCOs rented a furnished apartment and went to work at the hospital in their specialties. After four months at Fort Bliss, about 18 January 1991, SFC Ruthrauff volunteered to go to Saudi Arabia. She was denied permission by the commander of the 3297th, Colonel Peter A. Sanchez, on the basis that she was an Eisenhower asset who was only on loan to Bliss. SFC Ruthrauff returned to Eisenhower in January and worked in the Intensive Care Unit as a wardmaster until returning to the unit's home station on 18 April 1991. She thought the duty was good overall but that it could have been improved by some better planning for using the Reservists.²

Other members of the 3297th did not take the change in plans with such equanimity. Most of the members of the unit, and particularly senior physicians, had been attracted by the idea that upon mobilization they would be serving at Fort Gordon, only about 150 miles from their homes in the Atlanta Area. They expected to be able to travel home on weekends or days off to see their families and perhaps even to keep their practices going by seeing some patients.³ When they found that they would be used in CONUS but not necessarily at Eisenhower, some were shocked.⁴

Almost all of the original members of the 3297th Army Hospital ended up on active duty. The members not called up in August were called up in January and February 1991 to augment staff at CONUS hospitals during the ground war, and while the Active Component personnel returning from the theater took leave and got settled again at their CONUS stations. About 500 of the members of the 3297th ended up working at 42 different medical facilities in CONUS, and 15 (1 physician and 14 enlisted personnel) were deployed to the theater as individual fillers. In effect, the 3297th ceased to exist as a unit as its personnel were farmed out to serve where needed. In most CONUS medical facilities it was hard to tell who were the RC personnel and who were the AC personnel. The use of the Reservists as individual fillers was good for work, but bad for the soldiers involved. For one thing, the individual Reservists had difficulty getting help with their unit personnel problems and felt cut-off from their unit.

Back at Eisenhower Army Medical Center, the remnants of the 3297th continued to function in their original mission. Colonel Sanchez became the Deputy Commander of Eisenhower for Reserve Affairs and concurrently helped administer his unit and the Reserve personnel at Eisenhower. This contributed to Reserve soldier accountability. The Reservists wore the Active Component patch and were integrated into the work of the hospital, but as some of the original Active Component personnel came back to Eisenhower, there were too many physicians for the workload. One Reserve surgeon spent six months on active duty without

touching a scalpel. Early problems with the substandard billeting for all activated personnel had been corrected by January, and many of the Reservists lived in nearby motels under contract to the Government. Major Travis Everett, an administrative officer, missed the original activation and remained at the 3297th Hospital's Home Station working to support the troops at Eisenhower. Among other things, he sent a number of cooks there on annual training to augment the kitchen work force. Major Everett was activated on 31 January 1991 and worked at Fort Gordon until the entire unit was released from active duty on 18 April 1991.

The members of the 3297th believe that the "whole activation was overkill" because "no one knew what the casualties would be."⁵ After the release from active duty, some of the colonels and lieutenant colonels got out of the Reserve because their plans to spend the war close to home did not work out, and they were unwilling to give up or jeopardize their medical practices again. Most of the younger doctors, however, are not ready to get out but want to be utilized better on the next activation. Much of the problem for members of the 3297th stemmed from a lack of understanding of the mission of augmentation hospitals like theirs.

The Army Medical Department

Operation DESERT STORM was a major challenge for the Army Medical Department, and although the challenge was not met exactly the way it was planned, it was met. The long-standing plan to provide health care support for a major conventional war with the Soviet Union in Europe had to be adapted to the different demands of a War with Iraq in the Persian Gulf. The Army's plan called for rapid reassignment of medical clinical personnel from fixed "brick and mortar" hospitals to deployable hospitals, which would then be deployed to the theater to provide medical support for the fighting forces. Simultaneously, the fixed hospitals in the United States would be augmented by Army Reserve medical personnel to provide a capacity to receive patients evacuated from the theater. At the culmination of the plan there would be a medical force in the theater ready to receive, diagnose, and then treat or evacuate the anticipated number of patients to the United States. This is what actually happened, but there were major differences between the plan and the reality caused by the nature of the War with Iraq.

The Army Medical Department faces a major problem in reconciling two very different demands in wartime and peacetime. The wartime medical system has to be able to treat large numbers of battle casualties with a seamless system that operates smoothly from battalion aid stations in the combat zone all the way back to the hospitals and medical centers in the United States. The peacetime medical system has to treat large numbers of ill soldiers, their family

members, and retirees in fixed hospitals located overseas or in CONUS at major Army installations or major medical centers. The two missions are quite different--requiring different skills, different kinds of equipment, and different methods of administering health care.

A Note on Terminology

Terms and abbreviations used by the Army Medical Department require some explanation for the lay person. The Army Medical Department is the organization that provides medical and health care services to the Army. The Army Medical Department consists of six branches. Four of these are self descriptive; the **Medical Corps** (physicians), the **Nurse Corps**, the **Dental Corps** and the **Veterinary Corps**. The **Army Medical Specialist Corps** includes Occupational Therapists, Physical Therapists, Hospital Dieticians and Physician Assistants. The **Medical Service Corps** includes 29 specialties and provides medical unique administrative, field medical, technical, scientific, and clinical services to the Army Medical Department and the Army. Additionally, Medical Service Corps officers provide clinical direct patient care services that include audiology, podiatry, mental health, and optometry. There are two medical specific Warrant Officer specialties in the Army: the Veterinary Services Technician, responsible for food inspection and quality assurance, and the Health Services Maintenance Technician, responsible for managing health facility maintenance requirements. The enlisted career management field for medical (CMF 91) consists of 32 specialties. Enlisted duties include medical and dental care, therapy, laboratory testing and analysis, biomedical equipment maintenance, fabrication and repair of prosthetic devices, medical supply, and hospital food service. All personnel involved in the clinical treatment of patients will be called Health Care Providers (HCP) in this report unless a more specific categorization is needed.

The Army Medical Department operates two basic types of Medical Treatment Facilities: Medical Centers and Army Community Hospitals. There are also clinics, laboratories, veterinary activities, and various associated and supporting facilities. Generally speaking, the difference between a Medical Center and a Community Hospital has to do with size, number of specialties, and degree of care available. Each offers the beneficiary population in-patient as well as out-patient care. Medical Treatment Facilities may be either fixed (brick and mortar) or operate from temporary shelters in the field. Dispensaries are smaller facilities offering only out-patient treatment. Clinics are departments within a hospital, or also may be separate facilities offering a limited range of out-patient care. All of the facilities at which patients receive medical care will be called Medical Treatment Facilities (MTF) unless a more specific term is needed.

The basic term used to describe an amount of health care capability is a "bed". A "bed" is defined as an accommodation in a functioning medical treatment facility that is set up and

ready in all respects for the care of a patient, including space, equipment, material, staff, and ancillary and support services. So a "bed" includes inherently all of the people and resources to provide care for the patient in the bed. There are many different kinds of beds: operating, recovery room, intensive care unit, and special care unit. The capacity of a medical treatment facility is measured by the number of beds it is authorized or actually has available.⁶

The Peacetime Mission

The peacetime mission of the Army Medical Department occupies most of the time, attention, and money since most of the time the Nation is not at war. Medical Treatment Facilities (MTF), including clinics, medical department activities (MEDDACS), community hospitals, and medical centers, such as Walter Reed in Washington, D. C., provide medical care for illness and injuries that occur in the supported population. The primary purpose of the peacetime medical system is to maintain the health of the force--keep the soldiers themselves in good physical condition--primarily to increase their ability to fight when necessary, but also to reduce total health care costs through preventive medicine and promotion of good health practices. In addition, the Army Medical Department in peacetime provides medical care for the authorized family members of service members--wives, children, and others who meet the legal definition of dependents. Although there is no legal obligation to do so, the Army also offers medical care at its medical treatment facilities on a space available basis to retired military personnel and their family members.

Retired military personnel and their family members, as well as family members of active duty soldiers, may also receive medical care from the private sector under an insurance program called Civilian Health and Medical Program for the Uniformed Services (CHAMPUS), for which they pay a portion of the costs incurred. In order to hold down costs of CHAMPUS, the policy is that for all in-patient care and some out-patient procedures all eligible personnel must seek treatment in a military medical facility and be refused for lack of space or capability before they can be reimbursed by CHAMPUS for private sector services. This policy is designed to achieve a very high rate of utilization of fixed facilities and clinical personnel in peacetime. Upon attaining age 65, most CHAMPUS beneficiaries are transferred to the Social Security MEDICARE program.

Since the soldiers themselves are young and in generally good physical condition, they do not contribute the bulk of the peacetime workload--except for treatment of injuries due to accidents from training or day-to-day operations. Most of the peacetime workload, therefore, consists of civilian type disease and injuries, including delivery of babies and care for children. Since the retired population is older than the active duty population, caring for retired personnel involves diseases of aging and long-term chronic illness. In peacetime, the equipment,

pharmaceuticals, and the training and certification of clinical personnel are designed for treating the peacetime patient workload.

The peacetime medical system has to be capable of treating a wide variety of patients in fixed facilities, and using the very latest in high-technology medical equipment. It is staffed primarily by family practitioners, obstetricians, pediatricians, internal medicine specialists, and a variety of surgeons. It consists of many Table of Distribution and Allowances (TDA) units, each designed to handle a specific workload at a specific location.

The Wartime Mission

In wartime, however, the AMMED must be capable of treating a completely different kind of patient workload -- primarily combat casualties. Prior to World War II, it is a historical fact that more soldiers died of disease than from enemy action. But, because of great advances in preventive medicine, disease-related casualties have been greatly reduced. During World War II, Korea, and Vietnam, combat exceeded disease by a large margin as the primary cause of casualties.⁷

In time of war, however, there is an increase in what are called Disease and Non-Battle Injuries (DNBI). Injuries increase because the tempo of operations is higher, more vehicles move faster, more exercises are conducted, and more accidents happen. Disease increases because soldiers are sent to strange places and new recruits are added to the force. These increases in medical workload, however, are small compared to the workload anticipated from combat casualties.

Combat casualties result from enemy action (although a few are caused by friendly fire). Some casualties are killed outright, but most suffer wounds that may or may not lead to death, depending on the quality and timing of medical treatment. One of the primary purposes of the medical system in support of the Army in the field is to reduce the number of wounded casualties who die of their wounds. The Army has made remarkable progress in saving the lives of wounded soldiers who in an earlier time would have died of their wounds. Historically, about 65% of combat casualties are wounded slightly so that they can be treated and released, and about 20% of the combat casualties are killed outright. The remaining 15% of combat casualties are wounded seriously and require medical treatment to survive. The survival rate for seriously wounded personnel was 57% for World War II, 82% for the Korean War, and 73% for the Vietnam War. The apparent down-turn for Vietnam is misleading, for very rapid evacuation by helicopter in that war allowed soldiers who previously would not even have been treated to be moved quickly to medical facilities for life-saving treatment.⁸

Battle wounds are caused by pieces of metal (bullets, bomb or shell fragments, or pellets) hitting the body and tearing the flesh or damaging internal organs. The medical response to these wounds is to stop bleeding, treat for shock, and repair the damage by surgery. The definitive surgical procedure is performed as near to the front lines as necessary, depending on whether the patient can be moved safely or not. This is done to provide better conditions for surgery. If possible, the patient is stabilized and evacuated to a medical treatment facility farther behind the lines, in some cases all the way back to the fixed facilities in the United States before the final repairs are made.

The wartime medical system has to be capable of moving into a theater of war outside the United States, operate out of portable facilities (e.g. tents or portable shelters), and use equipment capable of working under field conditions. It is staffed primarily by health care providers of various kinds. This system consists of numerous Table of Organization and Equipment (TOE) medical units of various kinds, linked doctrinally into a single theater-to-CONUS treatment and evacuation system.

Reconciling Peacetime and Wartime Demands

Faced with two very different sets of demands for facilities, equipment, and personnel and the reality that two complete sets of medical units would not be possible, the Army had to find a way to change from a peacetime posture to a wartime posture quickly and efficiently. The solution was to have two sets of units but one set of active duty medical clinical personnel. Clinical personnel include all those who actually treat patients: physicians, dentists, nurses, optometrists, psychologists, radiological technicians, ward masters, and medical aid personnel. Most of the clinical personnel are officers. A significant number of enlisted personnel who are essential to the operation of the medical system are provided as fillers. Both TDA fixed medical units and TOE medical units also include support personnel who do not treat patients, although some may interact with patients. They include administrators, clerical personnel, supply and repair personnel, drivers, and other non-medical personnel. The Army created one set of Active TDA units for the peacetime mission with a full set of clinical personnel and support personnel. The Army also maintained a set of Active Component TOE units for the wartime mission but assigned to them only the support personnel. The idea was that the medical clinical personnel would work during peacetime in the fixed hospitals but would transfer to the field medical units and hospitals when needed to support combat operations.

The Professional Officer Filler System (PROFIS) was established in the mid-1970s to pre-assign Active Component clinical personnel to specific TOE medical units so that the change could be made quickly and easily. The rule for PROFIS was that these preassigned clinical personnel would move to their TOE medical units when requested--no delays and no excuses.⁹

Moreover, they would not be replaced by the Active Component when they left.¹⁰ This arrangement made best use of Active Army clinical personnel: they would work in fixed facilities in peacetime and in TOE medical units in wartime.

Even under this arrangement, however, the Active Army had insufficient medical assets to support the wartime mission. A large number of additional TOE medical units were maintained in the National Guard and Army Reserve, and these units--unlike those in the Active Component--had both medical clinical personnel and support personnel assigned to them. The total TOE Medical units were allocated about 30% Active, 20% Guard, and 50% Army Reserve. It was also necessary to provide individual medical clinical personnel to backfill the CONUS fixed MTFs once the Active Army personnel had gone to their TOE units. This was needed because the hospital beds in these fixed facilities would be used to provide treatment for normal peacetime workload, as well as the long-term care for battle casualties. The Army created in the Army Reserve a number of TDA hospitals that had the health care providers and some support personnel needed to augment the fixed hospitals to meet the expected wartime mission. IMAs and IRR members would backfill the PROFIS losses as they occurred.

The culmination of the plan would find a full set of fully manned Active, Guard and Reserve TOE medical units in the theater to provide medical support, backed-up by a full set of fixed hospitals in CONUS manned by predominately Reserve personnel. For a war in the Persian Gulf, military hospitals already in Germany would provide treatment and act as a staging area for further evacuation of patients to CONUS, when necessary. The whole system would be devoted solely to the treatment of battle casualties and DNBI resulting from the war. The family members and retired personnel formerly treated at the CONUS fixed hospitals would be treated entirely by the private sector under the CAMPUS insurance program.

Health Services Command operates all CONUS fixed facilities, delivers peacetime health care, and provides treatment during wartime for patients evacuated from the theater. The Army Forces Command and Unified Commanders have all of the TOE medical units of all components needed to support wartime operations. As well, Forces Command has the augmentation hospitals designed to augment the Health Services Command facilities. U. S. Army Europe would accomplish not only its own peacetime medical mission but, in the case of war in the Persian Gulf, would also provide care for evacuated combat patients.

At the start of Operation DESERT SHIELD in August 1990, this was the medical support plan for which organizational arrangements had been made. The plan was based on using a large number of Reserve Component medical units, so that a call up was necessary to provide the required capability.

The plan did not work as was intended because certain basic war planning assumptions did not come true. First, the assumption that peacetime family member and retiree workload would be shifted entirely to the private sector was wrong because the Army leadership directed that the Army would continue to support these personnel. Second, the assumption that pre-planned fill of deployable medical units by PROFIS would be adequate proved to be wrong as additional fillers were required to bring units up to minimum strength. Third, the assumption that all Reserve Component units, the IMA, and the IRR would be called up in an incremental, phased build-up was wrong. Only a portion of the Guard and Reserve was called since full mobilization was never reached and partial mobilization was not declared until mid-January 1991. That placed on the Active and available part of the Reserve medical force structure the unresourced requirement to support the processing of Reservists to active duty.

Another factor that impeded the medical support plan from working as intended involved the management of PROFIS. Here we had a nationwide system of obtaining certain skilled health care providers for our deploying units, and the Reserve backfill for those personnel as well, and we had no coherent automation system for managing it. There was no software or data base to sort out who or what we had or where they were assigned. Some personnel wound up with multiple orders. There was much confusion in this area that can be eliminated with proper planning and management.¹¹

Medical Support for the Army in the Field

The Army system for medical support of the Army in the field starts with the individual soldier and works back to the large medical centers in the United States. These centers are equipped with the most modern medical equipment and staffed by expert physician specialists. The system is designed to minimize loss of life from battle casualties and DNBI. There are five levels (or echelons) in the medical system: individual and unit care, clearing stations, corps hospitals, hospitals at echelons above corps in the Communications Zone, and fixed hospitals in the Zone of the Interior--the Continental United States (CONUS). In the case of the Gulf War, hospitals in Germany would play the same role as hospitals in CONUS for evacuated patients.¹²

Military medicine is unlike civilian medicine because the circumstances are so different. Typically, civilian medicine emphasizes performing all of the treatment in the same place by bringing doctors, including specialists, and various equipment items to the same vicinity as the patient--generally a fixed brick and mortar hospital. The emphasis in civilian medicine is to do all that can be done right away--that is, apply the maximum treatment at the outset. This tendency is limited by caution about trying conservative treatment before invasive surgery, but the thrust still is to apply maximum appropriate treatment at the outset. A surgeon with a patient

who has suffered a massive injury to the stomach will perform the complete operation at one time. In military medicine on the battlefield, the approach is the opposite. At the initial stages the physician does only the minimum required to assure that the patient will live and be capable of being moved back to another, larger medical facility. The initial stages in medical treatment are usually limited and lacking in shelter--except perhaps for a tent. A battalion aid station will consist of a clearing capability with some litters and medical personnel with their own medical kits. This is not an appropriate environment for complicated surgery, so the emphasis is on moving the patient back from the front lines--and out of additional danger from enemy fire--to a larger, better equipped facility where the necessary procedures can be done safely.

Evacuation is a fundamental part of military medicine. The intent is to get the patient moved away from the front lines as soon as possible. Battlefield evacuation may be accomplished by individuals carrying a wounded soldier to a medical facility, by stretcher bearers, or more and more by helicopters. Helicopter evacuation was started in Korea and used widely in Vietnam, so that a wounded soldier could be in a hospital within minutes of the time the wound was incurred. Rapid evacuation is credited with saving many lives that otherwise would have been lost, and the military emphasis on rapid evacuation has been adopted throughout the Nation for rapid evacuation of accident victims to trauma centers. Ground ambulances are used to move patients from one medical facility to another throughout the theater of operations and would have played a key role in the Gulf War had it been more protracted with larger numbers of casualties. Evacuation may also be made by large aircraft from airports near the combat zone, and these evacuation flights can move a patient directly to large hospitals in the United States or at mid-points. During the Vietnam War, many combat casualties were flown directly from medical facilities in the combat zone to Japan, and the plan was to use Germany as an evacuation destination for the War with Iraq.

The unit provides the first level of medical care. Each soldier is trained in first aid and self help, such as how to inject himself or herself with an antidote for nerve gas. Combat battalions and some combat support battalions have medical sections with a physician and several medical technicians. The battalion surgeon sees troops on routine sick call and in combat operates a battalion aid station to which many casualties are brought. Aid men are in support of each combat company and go with their supported units into combat in order to apply immediate treatment to wounded personnel. Unit personnel evacuate casualties to division medical companies.

The second level of medical care is at the division level. Within the division support command, there are four medical companies--one in each of the three composite forward support battalions and one in the main support battalion. Each of the forward support battalions includes also a maintenance company and a supply and transportation company and is designed to provide a broad range of service support to each of the three combat brigades in the division.¹³ At the

time of DESERT STORM almost all of the Army's divisions had reorganized to the multi-functional organization described above, and only two divisions--the 82nd Airborne and the 101st Air Assault--had their own organic medical battalions. Emphasis at level two is on emergency lifesaving measures to stabilize the patients and evacuate them to a higher level of medical care.

The third level of medical care is provided at the corps level by hospitals. Casualties are brought to clearing stations by the divisional medical companies, evaluated, provided necessary immediate treatment, and evacuated to a hospital using air and ground ambulance assets of the medical battalions. Casualties with life-threatening wounds are given immediate resuscitation surgery in mobile army surgical and combat support hospitals located in the combat zone near the clearing stations, while those with less threatening wounds are sent to evacuation hospitals. The emphasis at level three is basic life-saving surgery, stabilization, and rapid evacuation either to Echelons Above Corps (EAC) medical units or out of the theater.

The fourth level of medical care is provided in the communications zone by field and general hospitals at EAC. Casualties evacuated from the corps medical treatment facilities are given definitive care and surgery, and postoperative care. These hospitals also provide rehabilitation to return patients to duty in the theater. Emphasis at level four is on complete medical care to heal the patient.

The fifth level of medical care is provided by fixed hospitals in the Zone of the Interior (CONUS) that have the capability to treat special problems (such as burns) and provide complete care for patients evacuated from the theater. Emphasis at level five is on definitive long-term treatment and reconstructive care and rehabilitation. For DESERT STORM, fixed hospitals in Germany were also planned to be used in this role..

The Army uses six different kinds of hospitals to provide medical care in the theater of operations. Each is designed to perform a different task in the overall medical system, and each has different capabilities as shown in Figure 1.¹⁴ Intensive care unit (ICU) beds are for patients right after surgery; intermediate care ward beds are for patients recovering from surgery; medical ward beds are for patients with disease and other health problems. Hospitals at level three emphasize surgery; hospitals at level four provide both medical and surgical care and recovery.

Hospitals operating at level three are the mobile army surgical hospital (MASH), combat support hospitals, and evacuation hospitals. The function of the MASH is emergency life-saving by performing resuscitative surgery so that patients can be moved safely back to another hospital. The combat support hospital's job is to perform surgery on those patients not needing life-saving operations and to treat some medical patients, as well as evacuating patients to the rear, even directly to CONUS. The evacuation hospital performs additional surgery and

provides short-term care for medical patients, while continuing in the chain of evacuation either to another hospital in the theater or outside the theater.

Hospitals operating at level four are the field hospital, station hospital, and general hospital. These generally larger organizations have a capability for final surgery and also for medium term care of both surgical and medical patients.

Figure 1.

Comparison of Army Hospital Capabilities

	Operating Tables	ICU Beds	IC Ward Beds	Med Ward Beds	Total Beds
<u>Level 3</u>					
MASH	4	60	-	-	60
Cbt Spt	4	40	80	80	200
Evac	6	40	160	200	400
<u>Level 4</u>					
Field	6	30	180	190	400
Station	5	50	300	150	500
General	8	100	600	300	1,000

Because of the increased mobility of modern warfare, the increased vulnerability of rear areas to attack, and the faster evacuation of patients made possible by helicopters and aircraft, all of these hospitals have an emergency surgical capability to receive and treat casualties received directly from clearing stations.

The function, total and professional strength, and number of health care providers (HCP) authorized the non-divisional medical units used for Operation DESERT STORM are shown in Figure 2. For evacuation units, the numbers and kinds of equipment are shown. In addition, much specialized medical capability and most of the dental and veterinary capability is organized into 10-30 person detachments that can be co-located with larger medical units to provide the exact kind of overall medical support needed.

Figure 2.

TOE Non-Divisional Medical Units
(August 1990)

Unit	Authorized Strength	Authorized Officers	HCPs or Equipment
Clearing Company	120	10	7
MASH	239	68	64
Cbt Spt Hospital	303	73	60
Evacuation Hospital	402	89	77
Field Hospital	435	124	107
Station Hospital	395	124	106
General Hospital	707	233	206
Ambulance Co	110	5	36 Ambulances
Air Ambulance Co	200	30	15 Helicopters
Air Ambulance Det	53	10	6 Helicopters

NOTE: HCP represents officer health care providers and includes all who provide the clinical treatment of patients.

Reserve Call-up for DESERT STORM

Almost 26,000 Army Reserve and National Guard medical personnel were called up for DESERT STORM, as shown in Figure 3. The total strength of medical personnel in the Southwest Asia Theater was 22,139, with the Active Army providing 7,807 or 35%. One can easily conclude, therefore, that this function was truly integrated as a Total Army effort.

Figure 3.

RC Medical Personnel Called Up for DESERT STORM

	USAR	ARNG	Total
Southwest Asia	8,273	6,109	14,382
Europe	3,096	708	3,804
CONUS	7,619	149	7,768
Total	18,988	6,966	25,954

The story of Medical Support for Operation DESERT STORM has three parts: CONUS, Europe, and the Southwest Asia Theater. Each part operated independently yet was interrelated by a common mission to support the Army--and Army families--in this operation. Army Reserve and National Guard units are shown in boldface type in the task organization appendix to this report to highlight their contribution to the overall medical effort.

Medical Support in CONUS

The US Army Health Services Command (HSC), Fort Sam Houston, Texas, is a major Army command with responsibility for peacetime health care of the Army in CONUS. (US Army Europe and US Army Pacific have this responsibility in their respective overseas theaters.) HSC educates and trains medical personnel at the Army Medical Department Center and School and oversees medical research at the Army Medical Research Institute. In August 1990 HSC had 27,343 military and 23,955 civilian personnel for a total strength of 51,298, including about 10,000 physicians, nurses, and other medical professionals.¹⁵ Health Services Command operates 28 medical treatment facilities, ranging from large medical centers, to community hospitals, to dispensaries and clinics. HSC also was designated to receive 24 Army Reserve TDA medical units from FORSCOM upon mobilization.

In August 1990, HSC had the responsibility to care for 632,000 active duty military personnel, 896,000 family members, 900,000 retired military personnel and their family members and survivors, for a total population supported of over 2.4 million.¹⁶ HSC's average monthly workload in the year preceding DESERT SHIELD was 30,000 hospital admissions, 150,000 inpatient visits, 1.4 million outpatient visits, and 2.4 million prescriptions filled.¹⁷ Under cooperative arrangements within DOD, HSC medical treatment facilities also saw patients

of the other Armed Forces, while many patients received some or part of their care from private health care providers under forms of DOD health insurance. Health Services Command was--and is--a very large health maintenance organization with a large, well-served workload.

At the outset of DESERT SHIELD and DESERT STORM, HSC had--in addition to its peacetime missions--three mobilization missions:¹⁸

1. Provide professional officer fillers to the Active Component deploying hospitals in accordance with PROFIS.
2. Prepare to receive and treat casualties.
3. Provide medical support for the mobilization processing of RC units and the deployment processing of both AC and RC units.

These three mobilization missions were accomplished, but not in the way they had been planned.

Initial Actions and Changed Rules

On 8 August 1990, President Bush announced that the United States would send Army forces to Saudi Arabia, and the 82nd Airborne Division received its order to deploy.¹⁹ Health Services Command started to perform its mobilization missions. However, pre-war plans did not work out.

The President's order triggered the automatic transfer of numerous clinical personnel from the HSC medical treatment facilities to TOE medical units. This left the HSC facilities short-handed, but initially that was not perceived as a problem. The pre-war planning assumption--based on a Cold War scenario--was that upon mobilization the Army would shift family member care to the private sector and reserve all hospital beds and clinical personnel in CONUS for casualties.

However, on Thursday, 9 August 1990, the Chief of Staff of the Army decided that the Army would continue to provide full medical care for its family members throughout Operations DESERT SHIELD and DESERT STORM.

The decision caught HSC by surprise, and the immediate problem was to meet minimal requirements to continue minimal service at least at all HSC medical treatment facilities. The orders from Major General John E. Major, Commander of Health Services Command, were to

"be ready to go on Monday morning" (13 August 1990).²⁰ Cross leveling was needed, and over the weekend of 11 and 12 August 1990, 123 AC physicians were transferred to different medical treatment facilities, generally moving from the West Coast to the East Coast to provide necessary care to treat family members on Monday morning. HSC met the guidance, but there remained the problem of how to replace the providers that had moved to the TOE units.

HSC looked initially to its IMA program, but a quick review indicated that this program had been mismanaged in peacetime and was not requirements based.²¹ There were 2,100 IMAs, of which 1,100 were Medical Service Corps officers--useful, but not for providing medical care. The IMA program included only 193 physicians, mostly with the wrong skills for the DESERT STORM demand. HSC found that its IMA program was almost useless for the situation.

The situation was solved temporarily by Reserve volunteers. HSC worked with the Office of the Surgeon General to contact physicians and other health care providers in TPUs, IMAs, IRR personnel and brought in 1,100 volunteers who agreed to work at a specific location for a specific duration, generally greater than two weeks. These people came on board, and many were later locked in when personnel stop-loss provisions came into effect in December 1990. HSC "could not have made it without Reserve volunteers" in those initial days.²²

Ultimately, Health Services Command used all of its USAR Selected Reserve units for DESERT STORM, and 50 USAR and 13 ARNG units were called up.²³ In addition, 1,800 individual Reservists and 70 retired medical officers--all hand-picked volunteers with particular specialties to meet critical demands--were also called up to reinforce CONUS.²⁴

Filling the Deploying Units

As soon as the President announced that US troops would be involved in the Persian Gulf, the transfer of clinical personnel from HSC medical treatment facilities to FORSCOM TOE units got underway. During the entire operation, HSC sent over 3,200 AC personnel as fillers for deploying units as shown in Figure 4.²⁵ All of these requirements except the PROFIS predesignated personnel were essentially unprogrammed, and the fillers represented 11½% of HSC's pre-war active military strength of over 27,000. Considering HSC civilian strength, approximately five percent of HSC's pre-war strength was utilized.

Figure 4.

Health Services Command Fillers for Deployable Units

Category of Fillers	Officers	Enlisted	Total
PROFIS Designated	934	0	934
Fillers for AC Units	267	617	884
Fillers for RC Units	310	800	1,110
Bring SWA Units to ALO 1	45	100	145
Europe Backfill	87	-	87
Total	1,643	1,517	3,160

The initial call-up increment from FORSCOM listed all AC medical units as possible deployers to the Persian Gulf, and this triggered the automatic movement of clinical personnel from the HSC medical treatment facilities to the AC TOE medical units on Friday, 8 August 1990.²⁶ However, the enthusiastic adherence of the clinical personnel to the plan turned out to be a mistake, for only a few medical units were deployed in August, September or even October. This led to a situation where the AC clinical personnel were sitting around in their TOE units preparing to move at some future date but with no patients to treat, while back at the HSC medical treatment facilities, the newly called up RC clinical personnel were learning the ropes and taking up the slack. As it became apparent that all AC TOE medical units were not going to deploy right away, most of the AC clinical personnel returned to their HSC medical treatment facilities for duty while awaiting movement.²⁷

As it turned out, the 5th MASH was deployed in August and the 47th Field Hospital in late September, but most of the units deployed in December 1990.

The first additional demand for fillers surfaced when it became apparent that more AC medical fillers than had been planned would be needed to get the deployable medical units up to strength in enlisted medical specialties. The Army's deployable medical units were at ALO 3--about 80% strength--even with their programmed PROFIS fillers.²⁸ The demand was for clinical personnel rather than support personnel.

Faced with the guidance to provide health care for family members in CONUS, HSC needed one-for-one replacements for the personnel sent out as fillers to the deploying units.²⁹ The Army Reserve hospitals intended to augment HSC to receive casualties were used initially as "personnel pools from which HSC drew those critical-skill health care providers necessary to maintain services."³⁰ Derivative UICs were applied to the hospitals to obtain only the medical care providers and support personnel needed for a given circumstance, leaving behind the unneeded personnel.³¹ Initially, a total of 1,316 Reservists--616 officers and 700 enlisted personnel--were taken from troop program units and applied to HSC shortfalls. More were used for this purpose later on.³²

In addition to the personnel from the augmentation hospitals, HSC obtained additional individuals as shown in Figure 5.³³

Figure 5.

Individuals Called Up Involuntarily for HSC

	Officers	Enlisted	Total
IMAs	167	-	167
IRRs	1,500	200	1,700
Retirees	70	-	70
Total	1,737	200	1,937

When it became apparent that the PROFIS personnel had to be backfilled, HSC requested the call up of 553 IMAs, but the skills required were not available in the numbers needed. HSC called the IMAs to determine skills, abilities, and preferences, and this not only took a long time but resulted in some requests for discharge and complaints to Congress.³⁴

While the action to obtain the IMAs was underway, OTSG started a program to allow AMEDD Reservists to volunteer for Temporary Tours of Active Duty (TTAD) for periods of from 30 to 139 days. About 1,700 volunteers from units, the IMA program, the IRR, and from retirees served in this category and were very helpful in maintaining health care. However, this program also had some deleterious impact on the IMA program, since IMAs who wanted to avoid an involuntary call up of 179 days could volunteer for a shorter period of active duty and often obtain a location better suited to their personal desires.³⁵

The utilization of unit personnel and IMAs failed to fill the needs for particular specialties, and the Surgeon General directed the involuntary recall of 68 retired officers--surgeons and physicians assistants.³⁶

Another source of fillers for deploying medical units was the National AMEDD Augmentation Detachment (NAAD), a separate command under the FORSCOM Surgeon, responsible for management of Army Reserve physicians and nurses with designated critical skills. NAAD physicians and nurses are assigned to Army Reserve medical units but allowed to train flexibly instead of drilling regularly with their units. For DESERT STORM, the NAAD mobilized 180 physicians and 199 nurses to fill unit positions.³⁷

The IRR was "too late, too few, and had the wrong specialties" to be of much help early on.³⁸ The need for fillers occurred in the Fall of 1990, but the IRR became available only in January 1991, when the President authorized mobilization of the Ready Reserve. The IRR was able to meet some of the increased demand for health care providers to provide fillers for the large numbers of RC medical units that were called up and began to be deployed in December 1990 and January 1991. Ultimately, 666 IRR medical personnel were called up and assigned to deploying units. The IRR turned out not to be a good source of fillers to meet the initial demands.

The requirement to provide unprogrammed fillers for the deploying medical units forced HSC into a conflict between supporting the medical mission in the theater and providing CONUS support. The pre-war command arrangements were that all of the HSC medical units were assigned to FORSCOM and then to CONUS Armies and Army Reserve Commands (ARCOMs) on a geographical basis. Upon mobilization, they would transfer to HSC, but in this case the transfer did not occur all at once, and the CONUSAs and ARCOMs retained HSC medical units. This caused a problem because the CONUSAs did not understand (or possibly appreciate) the HSC mission and plan, and ARCOMs were cross-leveling medical personnel from HSC CAPSTONE units to fill deploying RC medical units. Instead of being reassigned to HSC, the hospitals processed through mobilization stations, which then could and did reassign personnel as fillers for other units. Lots of oral orders and instructions were passed via telephones, changing pre-mobilization planning, and this caused confusion.³⁹ HSC was unable to contact their CAPSTONE units prior to mobilization.⁴⁰

Supporting the Mobilization Process

The mission for HSC to provide medical support for mobilization processing was inadequately resourced. The plan was that essentially all of the Reserve units would be available to perform this mission, but for DESERT SHIELD the application of RC strength ceilings and

priorities for deployable units meant that there were insufficient personnel called-up to perform the medical processing at the mobilization stations. Most of this processing work was performed by ad hoc groups of AC personnel, augmented by some Reservists. In DESERT SHIELD, most AC medical personnel had already left the installation hospitals for their deployable units, so the hospitals and clinics were very short-handed.

HSC used both AC and RC resources to provide medical support for CONUS Replacement Centers, including vaccines and medical supplies, spectacles and protective mask inserts.⁴¹ Another major workload was examining personnel for dental problems and assuring that each soldier had a satisfactory dental panoramic x-ray to assure proper identification in case of death.

Preparing to Receive Casualties

One of the major missions of Health Services Command was to prepare 10,000 hospital beds for treatment of casualties evacuated from the Persian Gulf.⁴² Since many of its AC health care providers had transferred to deployable medical units, HSC had to obtain the additional personnel to staff not only its peacetime level of about 5,500 beds, but to staff 4,500 additional beds. This was the reason for maintaining 24 Army Reserve augmentation hospitals in the force structure. These hospitals were placed in the force structure to augment particular CONUS medical treatment facilities and increase their capability for patient treatment.

All twenty-four augmentation hospitals were called up entirely or partially for Operation DESERT STORM in four increments, as shown in Figure 6. Other USAR units CAPSTONE to HSC but not called up included the 3457th Medical Training Unit, Houston, TX, the 4164th USAR School, San Antonio, TX,--both intended for the Academy of Health Sciences (since renamed the AMEDD Center and School), Fort Sam Houston, TX, and 18 dental service detachments (listed below in the section on dental care). Due to their locations, Army Hospitals in Alaska, Panama, and Hawaii were not included in the plan for patient care, and the 1194th US Army Hospital at Fort Wainwright, AK, and the Reserve Augmentation Hospital in Honolulu, HI, to augment Tripler Army Medical Center, were not called up.⁴³

Figure 6.

Army Reserve Hospitals Called Up for CONUS Augmentation

<u>Reserve Hospital</u>	<u>Home Station</u>	<u>Mob Station</u>
<u>Called 27 Aug 1990</u>		
1207th USAH (100 bed)	Tuskegee, AL	Fort Benning, GA
3271st USAH (300 bed)	Charleston, SC	Fort Stewart, GA
3273rd USAH (300 bed)	Greenville, SC	Fort Campbell, KY
3274th USAH (1000 bed)	Durham, NC	Fort Bragg, NC
3297th USAH (1000 bed)	Chamblee, GA	D. D. Eisenhower AMC, GA
4005th USAH (1000 bed)	Houston, TX	Fort Hood, TX

Called 6 Dec 1990

2291st USAH (1000 bed)	Columbus, OH	Fort Bliss, TX
4010th USAH (1000 bed)	New Orleans, LA	Fort Polk, LA
5503rd USAH (300 bed)	Columbia, MO	Fort Leonard Wood, MO
6252nd USAH (750 bed)	Ventura, CA	Fort Riley, KS
6253rd USAH (1000 bed)	Hamilton, CA	Fort Carson, CO

Called 30 Dec 1990

1125th USAH (1000 bed)	Auburn, ME	Fort Devens, MA
1208th USAH (750 bed)	Ft Hamilton, NY	Fort Monmouth, NJ
2289th USAH (100 bed)	Wilmington, DE	Fort Lee, VA
3270th USAH (750 bed)	Ft Jackson, SC	Fort Jackson, SC
3343rd USAH (100 bed)	Mobile, AL	Redstone Arsenal, AL
3344th USAH (300 bed)	Tampa, FL	Fort Rucker, AL
3345th USAH (1000 bed)	Birmingham, AL	Fort McClellan, AL
5010th USAH (500 bed)	Louisville, KY	Fort Knox, KY

Called 5 Jan 1991

2290th USAH (1000 bed)	Rockville, MD	Walter Reed AMC, DC
5501st USAH (1000 bed)	Ft Snelling, MN	Brooke AMC, TX
5502nd USAH (1000 bed)	Denver, CO	Fitzsimmons AMC, CO
6250th USAH (500 bed)	Tacoma, WA	Madigan AMC, WA
6251st USAH (750 bed)	Tucson, AZ	Wm Beaumont AMC, TX

An expanded capability to perform necessary blood support, particularly in support of the mobilization processing, was obtained by calling up two Army Reserve Medical laboratories, the 426th, Chicago, Illinois, and the 432nd, Columbus, Ohio. In addition, 12 Health Service Liaison Detachments of the Army National Guard were called up and stationed at Walter Reed AMC and Eisenhower AMC to provide additional nurses for duty at those facilities.

The number of hospital beds required to be ready in CONUS was a function of the numbers and kinds of casualties expected to result from combat operations in the theater. Estimates of casualties are "always controversial and difficult to reach agreement on." HSC was never provided an official estimate upon which to base its planning and had to rely on its own calculations to arrive at the 10,000 bed objective and its plan for patient care.⁴⁴

The plan for reception of casualties in CONUS was worked out with the US Transportation Command and envisioned receiving patients initially at East Coast medical treatment facilities and then taking patients to facilities farther West as the facilities receiving the initial patients filled up. All patients would flow to medical centers initially to assure those needing this level of care would get it, and then moved to other, smaller medical treatment facilities if their condition warranted.⁴⁵ Walter Reed AMC, Washington, DC, and Eisenhower AMC, Augusta, Georgia, would receive the first patients, and then the patients would go to Brooke AMC, San Antonio, Texas, Beaumont AMC, El Paso, Texas, Fitzsimmons AMC, Denver, Colorado, and Madigan AMC, Tacoma, Washington, in roughly that order. Beaumont AMC would be an overflow facility for burn patients. Patients whose condition did not require a medical center level of care would be transferred to MEDDACs, if possible near their home town or family. Patients who would not be expected to be released for duty in 60 days or less would be transferred into the Department of Veterans Affairs medical system for long-term care.⁴⁶

The Medical Centers functioned not only as primary care facilities but also as the focal point for an entire medical region. The Medical Center commanders were given authority to cross-level personnel within their regions, and they were able to do this despite a shortage of administrative personnel for this purpose. Hospital bed expansion was ordered initially in the regions for Walter Reed AMC and Eisenhower AMC. Subsequently, as combat was imminent, actions were taken to expand hospital beds in the region controlled by Brooke AMC, San Antonio, Texas. The Institute of Surgical Research, a Medical Research and Development Command organization located at Fort Sam Houston, was also involved in getting ready to treat burn patients--its specialty. The USAR hospitals were called up in four increments, as shown in Figure 6.

The ability of these Reserve hospitals to backfill their designated MEDCENs and MEDDACs varied greatly. Although they were intended specifically to augment HSC hospitals,

many of the Reserve hospitals were instead organized as complete independently functioning hospitals, in some cases to improve recruiting for the units. In many cases the organization of the Reserve hospitals did not match the required structure at the AC medical treatment facilities. The Reserve hospitals were supposed to train closely with their AC organizations, and the results after the call up were good for the several cases where this was true. In other cases, however, there had been too little coordination and cooperative training, so that neither the AC facility nor the RC augmentation hospital knew very much about each other.⁴⁷

Augmentation hospitals had a diversity of health care providers--physicians, nurses, pharmacists, and clinical specialists--as well as support personnel--administrators, cooks, mechanics, and clerks. The need, however, was for the health care providers only because the HSC medical treatment facilities still had a full complement of support personnel. After intense discussion, it was decided to bring on only the health care providers and a few support personnel in the Reserve hospitals. This meant that the Reserve units would be broken up at the outset contrary to their expectations. Derivative UICs were used to identify and call up only those personnel needed for specific missions, at specific facilities. FORSCOM and OCAR opposed this process initially, but later they reluctantly agreed to do this.⁴⁸

The call up of portions only of the Reserve hospitals caused dissension in the ranks and problems in administration. Some Reservists were saying "why me?" while others were saying "why not me?"⁴⁹ In addition, many of the AC TOE medical units were taken off the deployment list and released their AC medical personnel back to the HSC medical treatment facilities, so that there were in some cases two physicians for each position--one AC and the other RC. This did not sit well with either group.⁵⁰

The experience of the 5501st Army Hospital points up some of the problems that were caused by the application of derivative UICs to the augmentation hospitals. A portion of the 5501st was called up to serve at Brooke Army Medical Center, Fort Sam Houston, Texas, but most of the unit members did not serve at Brooke and ended up working at various posts all over CONUS. The unit became in effect a replacement battalion that was looked to by Health Services Command, Fort Sam Houston, and the MEDDACs at which members were serving, to take the initiative to solve the numerous problems in personnel administration and pay for unit members who were called up. These problems included evaluations, service computation, DD 214s, pay, leave, promotions, and awards. This led to the situation where the active units at which the Reservists were serving did not provide administrative support and expected the inactivated part of the 5501st to do the job. Fillers who did not serve with the unit were assigned to the 5501st during the mobilization. The 5501st was still expected to provide support for these soldiers who had never seen the unit. The 5501st found it very difficult to perform this task with the administrative support part of the unit left in non-mobilized status at home station and without additional funding or personnel.⁵¹

Personnel of the 452nd General Hospital, USAR, Milwaukee, Wisconsin, were even more dispersed. About 150 personnel were cross-leveled; 90 of these were cross-leveled into the 5501st Hospital at Brooke AMC, while the remaining 60 were sent to the 44th General Hospital in Madison, WI for deployment with that unit to Europe. After having been leveled once, many of those personnel were cross-leveled again after reporting to Reserve units. Afterwards, members of this unit said that they found their experience in DESERT STORM to be terrible because they were "farmed out" as fillers, kept no unit identity when activated, and never felt that they "belonged" to the units into which they were cross-leveled.⁵² Nonetheless, medical unit size and skill mix were projected based upon anticipated casualty loads, and it was recognized in advance that this cross-leveling practice, especially where it was so extensive that units were decimated, would cause much personal anguish for the personnel involved.

The goal of 10,000 beds in CONUS was achieved, and the medical commanders thought they could operate at this level for a short time with the personnel they had, by working their people 12 hour shifts for 5 days each week. More personnel would have been required to staff all of the beds on a sustained basis had the anticipated casualties been received.⁵³

Walter Reed Army Medical Center

The experience of the Walter Reed Army Medical Center, Washington, D.C. is illustrative of events at other HSC facilities. In order to care for anticipated casualties, Walter Reed expanded its bed capacity from 876 to 1,317 during the mobilization, including an extra 100 intensive care unit beds, 140 minimal care beds, and 150 medical hold beds.⁵⁴ Hospital military strength expanded from 2,240 to 3,498 as a result of augmentation by Reservists, while civilian strength remained constant at just over 3,000. Figure 7 is a recap of military strength changes at WRAMC during the war. What the figure does not show is the timing, for most of the personnel transferred out of WRAMC did so in the Fall of 1990, while the backfill by Reservists occurred mostly in early 1991. So there was a 4-5 month period in which WRAMC had to carry out its normal mission with considerably fewer personnel.⁵⁵

Figure 7.

Strength Adjustments at Walter Reed Army Medical Center

Initial Military Strength	2,240
PROFIS to Deploying Units	-236
Backfill to MTFs in CONUS	-585
2290th Army Hospital	+174
First Army Reservists	+1,800
Other Reservists	+105
Total Strength	3,498

During this period, WRAMC was busy accommodating to strength changes and preparing to receive casualties while carrying on its normal mission. Billeting for Reservists was arranged with local apartment buildings and hotels. Shuttle bus transportation was expanded to meet the needs of troops living in the community. A Family Support Center was established to help families deal with the deployment and mobilization. Information for military personnel and their dependents was provided in newspapers and meetings. Training for Reservists to update their skills and for all personnel to anticipate care for combat casualties was arranged. WRAMC established a blood donor center that set a record for the amount of blood donated and supervised 4 other blood donor centers in the region.

The first DESERT SHIELD patient was received in August 1990 and additional patients were received through March 1991. A total of 591 casualties and patients from the Southwest Asia Theater were treated. During demobilization, WRAMC performed out-processing physical examinations for 1,478 Reservists. All of this was done while continuing to treat its normal load of patients from the active and retired military communities in Washington, D.C. and referrals to specialty clinics from MEDDACs throughout CONUS, Europe, and the Pacific.

At Walter Reed, the designated augmentation hospital, the 2290th from nearby Rockville, Maryland, was integrated readily into the operation of the medical center. Brigadier General Ralph Slusher, Commander of the 2290th, was assigned as Deputy Commander for Reserve Affairs and was instrumental in working out solutions to AC/RC issues, as well as trouble shooting for problems at Walter Reed and MEDDACs in the medical region supervised by Walter Reed.

Patient Transportation Needs

In addition to the need to move incoming patients arriving at an aerial port to the nearest medical treatment facility without undue delay, there was a need to continue installation support requirements and meet other FORSCOM medevac requirements. The capability to do this is determined by the number of litter patients that can be transported in an ambulance or converted bus or other vehicle. A single Air Force aeromedical evacuation aircraft is configured for 72 litter patients and 18 ambulatory patients. Using Army assets, HSC could have transported the patients from one aircraft in a single lift only at Walter Reed AMC, William Beaumont AMC, Brooke AMC, and Eisenhower AMC. HSC knew that they had an ambulance shortage at their medical treatment facilities. There were only 30 bus ambulances on hand in August 1990 against an authorization of 150. By using conversion kits, an additional 50 buses were converted to ambulance versions, so that HSC had a capability of meeting an Air Force evacuation aircraft and moving the litter patients in one lift to the designated medical treatment facility.⁵⁶ Arrangements were made with local medical facilities to obtain additional ambulances if necessary, and the RC air and ground ambulance units shown in Figure 8 were called up for HSC and assigned to the stations indicated to provide area coverage in place of AC units deployed to Southwest Asia.⁵⁷

Figure 8.

RC Ambulance Units Called up for HSC

Unit	Component	Home Station	Mob Station
126th Air Amb Co	ARNG	Mather AFB, CA	Ft Sam Houston, TX
1159th Air Amb Co	ARNG	Concord, NH	Ft Campbell, KY
1187th Air Amb Co	ARNG	Waterloo, IA	Ft Riley, KS
145th Air Amb Det	USAR	Dobbins AFB, GA	Ft Benning, GA
364th Air Amb Det	USAR	Vicksburg, MS	Ft Polk, LA
296th Amb Co	ARNG	Charleston, AR	Ft Hood, TX
423d Amb Det	USAR	Syracuse, NY	Ft Drum, NY
382d Amb Det	USAR	Nashville, TN	Ft Devens, MA

Matching Supply to Demand

The major problem caused by the decision to continue family member health care in CONUS was not the total amount of medical workload, but the difference in the kind of workload and the resulting difference in the mix of clinical providers needed.

This had some effects that were not foreseen. HSC found it necessary to move individual health care providers to meet specific demands for a particular specialty at a particular location. The transfers would be by area of concentration (specialty) or, more often, by name. All orthopedic surgeons available were deployed, leaving some CONUS medical treatment facilities short.⁵⁸ Family practitioners turned out to be valuable for both combat and CONUS health care missions because they cover a lot of fields, and could not only treat casualties but turned out to be particularly useful in the theater for treating enemy prisoners of war, refugees, and displaced civilians.⁵⁹

HSC did not know what capabilities were in their own Reserve units until the units actually arrived at the medical treatment facilities. All of the physicians and other health care providers had to be interviewed to determine their qualifications. There were serious problems in utilization. For example, an orthopedic surgeon who had specialized for ten years on hands only, in his civilian practice, was of limited value for treatment of other kinds of orthopedic problems. There was an excess of pathologists, and a shortage of surgeons.

Merely matching skills, however, is insufficient for health care providers, who must be qualified and licensed before they are allowed to treat patients. Physicians, for example, have to be both credentialed and privileged. A physician is credentialed by having earned the appropriate degrees (e.g., MD) and by being licensed (board certified) in a specialty. Health care providers also have to be granted privileges to perform specified duties in each medical treatment facility, and this involves checking credentials and taking other measures to assure that the individual is competent and qualified. The AC health care providers were generally in good shape for these requirements, but the RC medical personnel were not.

Many RC units initially did not have the required Practitioners Credential Files necessary to assure timely and effective utilization of these personnel at the medical treatment facilities.⁶⁰ The files were non-existent, poorly maintained, and contained outdated documents--all reflecting lack of knowledge by custodians and lack of cooperation by RC health care providers.⁶¹ A lot of time had to be spent in reviewing credentials and obtaining privileges for RC medical personnel. Since the individuals could not work until they were granted privileges, this caused some slack time that might have been serious if the expected casualties had occurred. As the mobilization continued, Credential Files were improved and the granting of privileges was less an administrative problem.

An additional problem was the status of health care providers who were doctors but not quite fully trained--residents--or engaged in graduate medical education. Interns are recent graduates of medical school who are receiving on-the-job training in hospitals under the supervision of experienced physicians. Residents are physicians who are studying a specialty in a hospital for several years. While these personnel are qualified to provide medical care, they are still in training and not yet fully qualified in a specialty. The issue was whether they should remain in training or go to war. Some AC residents were called up. But after the first blush of enthusiasm, all residents, and some of the physicians in other continuing medical education were released back to their training by order of the Army Surgeon General. AMEDD officers in the USAR who enrolled in full-time continuing medical education were exempted by the Surgeon General prior to the Presidential Call-Up Authority. This caused some confusion and difficulty for the individuals involved. It also created additional requirements for cross-leveling. The ARNG did mobilize some of their residents. Others who volunteered were utilized, as well.

In order to deploy personnel to the combat zone, a waiver of the statutory 12 week Officer Basic Course was obtained from OSD. Health Services Command had to arrange rapid instruction for RC medical officers otherwise ineligible to deploy because they had not yet completed the required Officer Basic Course. The Academy of Health Sciences developed a course of 111.5 hours of minimum deployability standards instruction to meet the requirement, scheduled six classes over their normal workload, and sent about 2,500 officers through the required course prior to deployment.⁶²

Pre-war arrangements for joint medical support did not work particularly to the Army's advantage. There was agreement that all of the Armed Forces would use six primary reception centers in CONUS. The requirement to continue family member care actually increased workload at Army medical treatment facilities because the Navy and the Air Force had not backfilled their own facilities after their deployable units had gone to the Persian Gulf. The Navy took many clinical care providers from its National Naval Medical Center at Bethesda and called some Reservists to fill in there, but it never got back up to its pre-war strength, and this diverted additional workload to the Walter Reed Army Medical Center in the District of Columbia. The Department of Veterans Affairs was aggressive in seeking a role but its hospitals are designed more for chronic care of older patients rather than treatment of combat casualties, although they were designated to treat spinal cord injuries. The National Disaster Medical System (NDMS), established under the leadership of the Department of Health and Human Services, was not considered required in this situation, but was considered for burn care if needed. In fact its capability was reduced because many clinical care providers in NDMS were Reservists called up to active duty.⁶³

HSC brought in nearly 8,000 Reservists to work at CONUS HSC facilities, and deployed 3,100 soldiers.⁶⁴ Headquarters, HSC itself was augmented by about 30 Reservists, primarily

administrative personnel, and the Commander of the 2291st Army Hospital, Brigadier General Alan J. Kunschner, was appointed Deputy Commander of HSC for Mobilization. HSC thought that the Reservists did a great job under difficult circumstances and displayed for the most part the mental agility that the situation required.

Medical Support in Europe

The mission of the 7th Medical Command in Europe during Operation DESERT STORM was to continue treatment of normal peacetime workload and establish 1,850 additional beds for treatment of battle casualties and DNBI from the theater of war.⁶⁵

Planning for Support of the War

Pre-war plans that assumed that the entire USAREUR medical system would be available in the event of war elsewhere were disrupted by the surprise deployment of VII Corps and about 75,000 personnel from Europe to the Southwest Asia Theater. Until the demise of the Warsaw Pact and its military forces, it was never envisioned in war planning to deploy a corps from Germany to another theater. Thus, no logical plan for how to obtain backfill for deployed assets had been contemplated. Medical units that left Germany for SWA provided some of the medical support within the corps and included a medical group headquarters, an evacuation hospital, two combat support hospitals, two air ambulance companies, two ambulance companies, a medical supply, optical, and maintenance company, 5 medical detachments, 4 dental detachments, and 1 veterinary detachment (small animal), for a total strength of about 1,800 personnel.⁶⁶

The deploying AC medical units took more personnel with them than was anticipated by 7th Medical Command. Some health care providers were reassigned to the deploying units from other European medical treatment facilities. This left 7th MEDCOM short of the professionals it needed to accomplish both of its missions. The preferred solution was to offset the losses to Southwest Asia and obtain the additional personnel to expand bed capacity by getting individual fillers from CONUS with particular skills to work at existing medical treatment facilities.

Health Services Command, however, could not meet 7th MEDCOM's request for fillers at the same time that it was in the process of filling AC and RC medical units and expanding CONUS bed capacity. Ultimately, HSC did send 87 primary care physicians to Europe to take care of critical skill shortages. The 87 HSC physicians were sent in groups of about 20 each to arrive in weekly increments starting 10 December 1990. In addition, 11 nurses and 4

surgeons were sent to Germany on TDY to provide additional coverage from 15 December 1990 to 4 January 1991.⁶⁷

Since the 7th MEDCOM request for individual fillers could not be met from CONUS AC assets, Reserve units were called and deployed. This posed a problem for the 7th MEDCOM. Placing Reserve hospitals intact into re-opened facilities or field assemblages was not favored by 7th MEDCOM because it would not have been possible to provide first class care in re-opened facilities that were in poor condition and short of modern equipment. The solution was to break up the Reserve hospitals and assign their personnel to existing medical treatment facilities. Not only did this solution meet 7th MEDCOM's needs, but it made best use of existing facilities that were understaffed. It was, however, unnerving to the deploying Reservists, most of whom had no European experience and whose morale dwindled as their units were broken up and they scattered throughout Europe. Nor had there been any advance word of this method of employment to the individuals, thus no period of time to adjust to the notion. While this solution to the problem was traumatic to some, it had been given extensive consideration at Headquarters, Department of the Army, and was not taken lightly. With its disadvantages recognized, it was still considered to be the most feasible way to provide the required support to Europe.

Utilization of Reserve Reinforcements

A total of 3,804 Guard and Reserve medical personnel were deployed to Europe. The medical units are shown in Figure 9. In addition, four blood units and four dental detachments were sent to Europe, and the 324th MEDSOM, USAR, Chester, PA, deployed to backfill the 428th MEDSOM that had deployed to Southwest Asia with VII Corps.

Figure 9.

RC Medical Units Sent to Europe

<u>Unit</u>	<u>Component</u>	<u>Home Station</u>
44th General Hospital	USAR	Madison, WI
94th General Hospital	USAR	Seagoville, TX
328th General Hospital	USAR	Fort Douglas, UT
45th Station Hospital	USAR	Vancouver, WA
56th Station Hospital	USAR	Richmond, VA
300th Mobile Army Surg Hosp	ARNG	Smyrna, TN
112th Air Ambulance Co	ARNG	Bangor, ME
306th Clearing Company	USAR	Nashville, Tn
245th Clearing Company	ARNG	Midwest City, OK

About 670 personnel of the 44th General Hospital deployed to Germany on 15 and 16 January 1991. Upon mobilization, the unit had received 60 personnel from the 452nd General Hospital, USAR, Milwaukee, Wisconsin, and another 60 personnel from the 801st General Hospital, USAR, Chicago, Illinois. Upon arrival in Germany, the hospital headquarters and approximately 200 of its personnel were stationed at Landstuhl General Hospital to expand the capacity of that facility from 180 to 1,000 beds. Another 110 were sent to the 97th General Hospital in Frankfurt, and the rest were sent in small groups to hospitals and clinics in Augsburg, Nurnburg, Wurzburg, Bad Cannstadt, Berlin, Belgium, and elsewhere. Most of these personnel returned to CONUS in early May 1991, but some remained through August 1991.⁶⁸

The Reservists report that their work with patients was rewarding, even though the expected casualties did not materialize. There was a lot of stress on the group that remained at Landstuhl because many surgeons of all types, and components, were there with little to do.

The effect of being moved around to different units were traumatic for the Reservists of the 44th General Hospital. They report that they were not well integrated into the AC hospitals and clinics in Germany. At the physician level, the courtesies and privileges were handled professionally, but many Active Army personnel were discourteous to Reserve nurses and enlisted medical technicians--perhaps because they were intimidated by the high level of expertise of the Reservists, many of whom work in civilian life in their medical specialties. A psychiatric nurse assigned to the 452nd General Hospital and cross-assigned into the 44th General Hospital was sent to the 97th General Hospital in Frankfurt and reports that both the Reserve unit (the 44th) and the Active unit (the 97th) considered her to be an asset of the other, and so neither gave any support or assistance. She believes that the Active Army personnel disliked the Reservists, while the patients loved them. Another nurse, diverted upon arrival in

Germany to the 67th Evacuation Hospital in Wurzburg, also reports no supervision or help from the 44th General Hospital while she was at Wurzburg or later in Berlin. She says that a major problem was transportation to get to and from work from quarters because none of the Reservists had private vehicles, and had to rely on bus transportation which was inadequate to the need. A sergeant first class thinks the Active personnel where he worked resented the Reservists because they feared for their jobs. Many of the Reservists of the 44th General Hospital complain about being assigned sub-standard housing. On the other hand, one Reserve lieutenant colonel, when apprised of these sentiments, dismissed them as just routine soldier griping and said that the dispersion of the personnel to different units was necessary to accomplish the mission of the 7th MEDCOM. It does seem that the rapidity and smoothness with which Reservists were integrated into the unit they joined was dependent upon their perception of their initial reception.

The experiences of members of the 45th Station Hospital, a USAR organization from Vancouver, WA are similar to those of the 44th General Hospital, except they had some exacerbating circumstances. The first was that the 45th deployed to Germany on 24 December 1990, arriving Christmas morning. Upon arrival at Frankfurt, the unit was broken up and the personnel were assigned as individual filiers all over Germany, Belgium, and Italy. The headquarters element was stationed at Landstuhl Medical Center. Eleven nurses were sent to Saudi Arabia immediately after arrival in Germany. This splitting of the hospital devastated the morale of the personnel and was totally unsettling as they were just arriving in a strange setting and were already apprehensive.⁶⁹

The Chief Nurse reported that 91C personnel (LPN) were poorly utilized because, thankfully, there were no numbers of combat casualties evacuated into Europe for treatment. As a consequence, many of the 91C personnel were used as clerks and bus drivers. Other enlisted personnel in the 45th helped convert hospital clinics to wards and functioned as guards and on janitorial duties. Anesthetists and Operating Room Nurses were well utilized in dealing with the routine placetime workloads in the MTFs throughout Europe.

Frustration was widespread among those Reservists who provided medical support to Operation DESERT STORM through service in Europe. Because Europe was not in the combat zone per se, numerous benefits and recognitions were denied them. For example, the large symposia for medical after-action reports were not available to the medical care providers of the hospitals from Europe. While campaign ribbons and awards for gallantry in action were inappropriate, some ribbon should have been available for those directly supporting the war effort from Europe. Members of the USAR hospitals deployed to Europe felt snubbed at not being allowed to march in the victory parades in Washington and New York because they had not served in the Gulf. Finally, even from their peers who did serve in the Gulf, these Reservists who served in Europe feel they are looked down on somewhat as not having "really

served in the war".

Nonetheless, the personnel who deployed to Europe did a superb job and that fact is recognized throughout the Total Army. In a variety of circumstances, some pleasant and others primitive, and in a variety of leadership climates, these men and women were effective professionals who are just as deserving of their nation's gratitude as anyone who was committed to the war with Iraq.

Medical Support in the Southwest Asia Theater

A total of 85 active, 30 ARNG, and 74 USAR medical units were deployed to SWA. The number of AMEDD officers authorized for units in SWA by their respective corps is in Figure 10.⁷⁰ Total AMEDD strength in the theater was 22,139, almost 8% of Army strength. The Active Army provided about 35% of the total, the Army National Guard, 28%, and the Army Reserve, 37%. The complete order of battle of all medical units in the Southwest Asia Theater as they were organized during the Ground Combat Phase is in Appendix A.

Figure 10.

AMEDD Officers Authorized for Southwest Asia

Medical Corps	1,460
Dental Corps	141
Veterinary Corps	30
Medical Specialist Corps	51
Army Nurse Corps	2,265
Medical Service Corps	1,352
Physicians Assistants	<u>182</u>
Total:	5,482

The Medical Support Concept

Medical support in the theater focused on minimizing the number of wounded or injured personnel who died after entering the medical system. Returning personnel to duty within the theater was not a major factor, for the war was expected to be a short one--a matter of a few weeks at most.⁷¹

Keeping people in the theater long enough for them to heal was not feasible. The medical structure was designed to minimize loss of life, limb, or function. Essentially, the build up of medical units in the theater was executed in three stages, with considerable variation and overlap due to changes in circumstances and mission. During the initial stage when the ARCENT mission was defensive, medical emphasis was on preventive medicine and veterinary units to minimize disease from tainted food and water and poor sanitation. As the ARCENT mission changed to one of building up for offensive action, the second stage of the medical build up emphasized medical logistics, to provide the supplies of pharmaceuticals needed to sustain health, and mental health, to combat the stress induced by living and training in a harsh environment with little recreation and uncertainty as to the future. The final stage was to build sufficient hospital beds in the theater to provide immediate treatment for the casualties expected to result from the ground war. The idea was to get the hospital beds--in the theater and in Europe and CONUS--ready just in time for the ground war. Patients would be provided immediate treatment in the combat zone then moved to hospitals in the rear areas either for treatment or for evacuation to Germany and/or to CONUS.

The theater evacuation policy for Southwest Asia was a function of medical force structure in the theater and evacuation assets available. The theater evacuation policy--the preeminent factor in pre-war medical planning--is the number of days a patient would be treated in the theater. Patients whose treatment would require more days than the policy would be evacuated, while patients who could recover in fewer days would be retained in the theater for full treatment. In planning for the major conventional war in Germany, the theater evacuation policy had been established first, and the theater medical force structure to fit it was then determined. For DESERT STORM, the process went the other way around because of the low priority accorded medical units along with other combat service support units. In the early days of August and September, when there were few medical units in the theater, the practical policy was to evacuate all patients for even minor complaints. As medical units arrived in the theater in December 1990 and January 1991, the capability for patient care in the theater improved, and the de facto evacuation policy increased to about 30 days. The plan was to reduce the evacuation policy to 7 days during the ground combat phase, but the short duration of the war obviated that need.⁷²

The basic factor determining medical force structure requirements and the number of beds to be made available is the number of casualties to be treated. Once the numbers and types of casualties are known, the numbers and types of beds and health care providers can be calculated with a high degree of accuracy. However, estimating casualties for future military operations is not an exact science. The usual method is to project casualty estimates experienced in recent wars, but confidence in this method was diminished by the results of the 1967 and 1973 Arab-Israeli Wars that reflected greater numbers of casualties than experienced in World War II or the Korean War.⁷³ New methods of casualty estimation taking these results into account were

devised and used for DESERT STORM but proved generally invalid. For the War with Iraq, many sincere analysts proffered casualty estimates ranging from several thousands to many thousands, depending primarily on how long the estimators thought the war would last.

There was no single authoritative set of casualty estimates accepted by all AMEDD activities. The Army Surgeon General, ARCENT, HSC, and 7th MEDCOM each used their own locally produced estimates to plan their own part of the overall medical system. ARCENT estimated that the DNBI rate would be about 700 per day, and that for a campaign of 32 days, there would be about 30,000 combat casualties--wounded in action--requiring medical care, including 2,000 casualties from Coalition forces.⁷⁴

Fortunately, these estimates were much too high. The actual fatalities suffered by US forces were as shown in Figure 11. In addition, the Army had 354 personnel wounded in action and 277 personnel with non-battle injuries.⁷⁵

Figure 11.

Armed Forces Fatalities in DESERT SHIELD & DESERT STORM

	Army	USAF	USMC	Navy	Total
Killed in Action	94	20	22	6	142
Died of Wounds	2	0	2	0	4
Non Battle Deaths	128	15	44	50	237
Total Deaths	224	35	68	56	383

Build Up of Hospital Beds in the Theater

The Army medical force structure in the theater was austere in the first two months, then there was a gradual build-up until 28 December 1990. There were adequate medical assets of the Air Force and Navy available to the theater during that period. During the month of January 1991 a large number of units arrived and the Army's medical force structure assumed its full size, although it took another month to attain its full capability. This build-up profile was due to the generally low priority given combat service support units of all kinds during the early stages of DESERT SHIELD. It was not until after the combat units were in place, that the

medical force structure achieved its design goal of 13,580 beds, including 400 beds set aside to treat enemy prisoners of war.⁷⁶

The buildup of hospital bed capacity in the theater is shown in Figure 12.⁷⁷

Figure 12.

Theater Hospital Capacity Build Up

	15 Sep	30 Oct	30 Nov	28 Dec	17 Jan	31 Jan	15 Feb	25 Feb
Army Hospitals	3	7	8	8	41	44	44	44
Army Beds TOE	660	1860	2060	2060	13120	13580	13580	13580
Army Beds Opnl	166	532	960	1660	2860	5800	9649	11638
Army Bed Ratio*	301	214	139	113	86	49	30	26
* * * * *								
CENTCOM Beds Opnl	2630	2852	3280	3635	5085	9353	14038	16027
CENTCOM Eed Ratio*	62	80	74	86	84	54	37	33
Non-Army Beds	2464	2320	2320	1975	2225	3553	4389	4389

* Troop population per operational hospital bed.

The allocation of 44 hospitals in the fully developed theater is shown in Figure 13. This allocation provided 2,980 beds for XVIII Airborne Corps, 3,300 for VII Corps, 3,200 for EAC, and 4,100 for host nation support.⁷⁸

Figure 13.

Allocation of Army Hospitals in Southwest Asia
Echelons Above Corps

	AC	ARNG	USAR	Total
Evacuation	2	5	5	12
Field	1	-	2	3
Station	-	-	1	1
General	-	-	1	1
Total	3	5	9	17

VII Corps

	AC	ARNG	USAR	Total
MASH	-	3	2	5
Combat Spt	2	-	3	5
Evacuation	1	2	2	5
Total	3	6	6	15

XVIII Airborne Corps

	AC	ARNG	USAR	Total
MASH	3	-	-	3
Combat Spt	4	-	-	4
Evacuation	3	1	1	5
Total	10	1	1	12

Modernization of Hospital Assemblages

Like other parts of the Army, AMEDD was in the middle of a transition from one generation of equipment to another. The AMEDD was able to equip most of its units in Southwest Asia with the latest equipment--thanks partly to Congress. An "assemblage" is the term used in AMEDD to describe the medical equipment, shelters, and auxiliary machinery needed to outfit a hospital. The Army was in the process of replacing the Vietnam War vintage Mobile Unit Self-Contained Transportable (MUST) assemblages with the Deployable Medical Systems (DEPMEDS) equipment. MUST uses a set of inflatable rubber buildings to provide a suitable environment for surgery and other medical procedures. DEPMEDS uses prefabricated shelters with equipment installed for various medical procedures that are linked together by passageways to form a complete hospital. A DEPMEDS module looks like a large shipping container with doors at either end. Both systems need auxiliary generators and pumps, and both systems use tents for housing the troops working at the hospital. The big advantage to DEPMEDS is that it represents 1980s medical technology.

When the AMEDD started fielding DEPMEDS in the mid-1980s, it received considerable assistance from Congress in the form of firm guidance to make certain that the Reserve Component got the new assemblages at the same time as the Active Component. As a result, at the start of the war, many AC units still had MUST assemblages, while other AC units and many RC units had at least training sets of DEPMEDS. A lot of DEPMEDS assemblages had been prestocked in Germany for units to draw after air deployment there for a major conventional war, and a lot of DEPMEDS components were stored in a DLA Depot in Ogden, Utah, for eventual issue to units. The availability of these stocks made it possible for 35 of the 44 Army hospitals in Southwest Asia to be equipped with DEPMEDS.

The 47th Field Hospital had moved from CONUS in September 1990 to fall in on equipment that had been prepositioned in Bahrain, but the prepositioned hospital assemblage was pre-MUST (tents), and in December the 47th Field was converted to DEPMEDS to provide EAC support in Bahrain. The 28th Combat Support Hospital arrived in Southwest Asia in August 1990 and reported that sand in the equipment used to inflate the MUST shelters made them unreliable. The next two hospitals to deploy--all AC--took their MUST equipment with them, but it was soon apparent that MUST would not work well in the desert environment because the dust and heat were causing the turbines used to inflate the structures to shut down.⁷⁹ Furthermore, although MUST equipment was pretty good, it was a full generation behind the equipment used in the CONUS brick and mortar hospitals and many of the health care providers had little training or experience on MUST assemblages. Either the personnel had to be trained on MUST or the hospitals should get newer equipment. The issue was settled when the first five Army hospitals deployed to Saudi Arabia found that the MUST equipment was unsatisfactory in that environment. The Army moved rapidly to refit as many hospitals as

possible with DEPMEDS.⁸⁰

DEPMEDS equipment was taken from the prepositioned stocks in Germany and from the Ogden Depot and shipped to Saudi Arabia where it was issued to units that arrived by air with only their non-medical gear, vehicles, and some tentage. FORSCOM coordinated the movements of the units and equipment so that both would arrive at about the same time. Hospital personnel would arrive by air and move by truck or bus to their designated location, and their DEPMEDS equipment would be delivered to them by a special DEPMEDS Fielding Team.⁸¹ Even the DEPMEDS sets, however, were short some types of equipment--for example, the ICU in a DEPMEDS set had only one ventilator--so it was necessary to procure large quantities of commercial medical equipment off the shelf for use in the theater.⁸²

Enough DEPMEDS components were available in stocks to outfit 35 hospitals deployed to the theater. To achieve the goal of 13,580 beds, the Army exploited the opportunity to co-locate nine hospitals with host nation hospitals.

Integration with Host Nation Medical Facilities

Host nation support has become essential to American military planning and our policy is to use it wherever feasible. In the case of the Gulf War, Saudi Arabia provided support to American (and other Coalition) forces to ease many of the more costly logistical and administrative support burdens. This included medical support where U.S. military medical units shared facilities in nine hospitals of host governments. The Saudi hospitals were well equipped with the latest equipment, such as CAT scanners and dialysis machines; compared favorably to similar US facilities, and were better equipped than the Army's hospitals in many cases. Figure 14 shows the US hospitals sharing host nation hospital facilities.⁸³ All of these were RC hospitals that did not have assemblages and could not otherwise have set up operational hospitals in the theater.

All of these arrangements were in place except for the use of the King Faisal Hospital, which was planned to be coordinated on the day that the ground war was to start, but never was finalized. Instead, the unit intended for this facility was split up and used to augment other hospitals. In order to provide additional overflow capacity for casualty care, three hospitals were established outside of Saudi Arabia. Two evacuation hospitals were located in Abu Dhabi and Dubai respectively with no difficulty--but with no real workload either. The goal was to establish 400 beds in Oman, but only 100 beds could be obtained, and the rest of this overflow capacity was obtained from an Air Force hospital there.⁸⁴

Figure 14.

US Hospital Sharing with Host Nation Hospitals

<u>US Unit</u>	<u>Host Nation Hospital</u>
50th General Hospital	Riyadh al Kharj Military (MODA), Riyadh
129th Evacuation Hospital	United Arab Emirates, Dubai
207th Evacuation Hospital	King Fahd Military Hospital, Dhahran
217th Evacuation Hospital	King Faisal Royal Hospital, Riyadh
316th Station Hospital	King Fahd NG Hospital, Riyadh
382nd Field Hospital	King Fahd NG Hospital, Riyadh
251st Evacuation Hospital	Northern Territories Military Hospital
311th Evacuation Hospital	United Arab Emirates, Abu Dhabi
365th Evacuation Hospital	U.S. Military Medical Center, Oman

In these cases, the US medical personnel shared the facilities--beds--with the Saudi medical personnel. The hospitals remained under Saudi control, and U.S. hospital commanders were informed in no uncertain terms that they were guests of the Saudis and commanded only their own US troops. This was a source of some conflict, and one US hospital commander was relieved and another warned because they did not accede to Saudi control.⁸⁵

Two USAR units--the 382nd Field Hospital and the 316th Station Hospital--were assigned to the King Fahd National Guard Hospital (KFNGH), Riyadh. The hospital is a 536 bed academic-tertiary care medical center serving the soldiers and families of the Saudi Arabian National Guard (SANG). It has about 3,500 employees. All its nurses are registered, and all of its physicians are board certified. KFNGH is managed by a joint venture of two Saudi Arabian hospital management companies. U.S. Army medical officers from the Project Management Office for SANG Modernization were providing on-going advice to this hospital and other SANG medical facilities. With the addition of a burn team from the US Army Institute of Surgical Research and two neurosurgeons, KFNGH was designated to be one of the two burn centers and one of the three neurological centers for the theater. All of the US Army personnel assigned to KFNGH were placed under the military control of the Commander of the 382nd Field Hospital, who reported to the 244th Medical Group.⁸⁶

Meetings between the KFNGH and the US advisors to work out a memorandum of understanding (MOU) started in October 1990, about 3 months before the two units arrived on 17 January 1991. The final MOU was signed on 11 January 1991 by the Deputy Director of SANG and the ARCENT Commander. The MOU provided the standards to be applied for accreditation and credentialing of physicians and other health care providers and specified that US personnel would work under the Saudi chain of command in conformance with Saudi

policies. KFNGH provided nearby housing for 80 US on-call personnel, meals at the hospital, and considerable administrative support. US personnel were briefed upon arrival on the MOU, the mission, and Saudi Arabian customs. Each medical department also conducted a detailed discussions of its own operations. During the war, KFNGH treated 252 military patients, including 19 combat casualties--16 US, 1 UK, and 2 SANG. The patients were transported to Riyadh by C-130s and to KFNGH by air or ground ambulance. US patients were cared for by both KFNGH and US Army medical personnel.⁸⁷

Using host nation facilities was not without problems. The agreements worked out to use the Saudi facilities had the effect of placing the US health care providers under the direction of the Saudi professionals. US health care providers were forced to sign contracts to work at the King Faisal Research Hospital, and they were required to wear civilian clothes at work.⁸⁸ Credentialing was also a problem, and some US physicians allowed to practice in US hospitals were only credentialed by the Saudis as consultant physicians. Other problems stemmed from the differences between US and Saudi standards of care and hospital procedures. Since the Saudi professionals had been trained in Germany or the United Kingdom, they organized and operated their hospitals differently than the Americans. Great autonomy was granted to hospital registrars under the British system which was used by the Saudi hospitals. This led to problems in admitting patients. In some cases, Saudi registrars refused to admit US soldiers even upon the recommendation of a US physician. There were other problems: Saudi physicians were less likely to prescribe narcotic pain killers than US physicians; cardiopulmonary resuscitation was not allowed; and female officers and soldiers were not accorded equal treatment with their male counterparts. The Saudi nursing system allowed less technical independence to nurses for such tasks as drawing blood and starting IVs, and male nurses (a significant proportion of the total) were not allowed to care for female patients.⁸⁹

Some problems occurred because of differences between US and Saudi customs, and some behavior totally acceptable in US hospitals was considered inappropriate in Saudi hospitals. Males and females eating lunch together, female nurses talking to male patients about non-medical matters, or ambulatory patients walking around and socializing were all frowned on by the Saudis. The US chain of command had to give "stern reminders" to avoid placing the US unit at risk of being asked to leave.⁹⁰

Some of the difficulties jeopardized the health of US troops. Saudi hospitals refused in many cases to admit US soldiers with non-combat injury related illness. Female US soldiers with gynecological problems were not considered "battle casualties" and were not allowed to be admitted. The 50th General Hospital at the Riyadh Al Kharj Military Hospital found that this made it difficult to provide reasonable outpatient and inpatient care for minimal care patients.⁹¹ While sharing Saudi facilities eased the need for American equipment to be shipped to the theater, it is not recommended as a desirable, long term solution by many of those involved.

Other Army medical personnel involved in this program, however, believe that it makes good sense to use existing facilities in areas where US forces might be deployed on contingency missions. The experience of DESERT STORM indicates that planning for future use of host nation facilities should be done in peacetime. Contacts and memoranda of agreement with pre-designated medical facilities should already be in place so that integration of U.S. medical personnel into the facility goes smoothly when the need arises.⁹²

Use of Medical Detachments

One feature of pre-war planning for theater medical support was placing in the force structure numerous small detachments to provide specialized medical care. They are assigned to augment hospitals for particular kinds of surgery or medical care. These detachments range in size from four to 15, including one or two medical specialists and supporting personnel to provide a complete medical service. These small detachments are not designed to function independently, and they have to satellite on a larger unit for administrative and logistical support, including food and shelter. Many of these detachments, listed in figure 15, were called up for DESERT STORM. Veterinary, dental, psychiatric, and preventive medicine detachments are discussed separately in applicable sections of the monograph.

Figure 15.

Medical Detachments Deployed to Southwest Asia

Type of Detachment	AC	ARNG	USAR	Total
Anesthesiology	-	-	1	1
Dispensary	4	-	-	4
Laboratory	-	-	3	3
Maxillofacial Surgery	-	-	3	3
Neurosurgical	1	-	5	6
Orthopedic Surgery	1	-	3	4
General Surgery	1	1	3	5
Thoracic Surgery	1	-	1	2
Psychiatric	1	-	2	3

The 318th Medical Detachment (Anesthesiology), USAR, Fort Snelling, Minnesota, was activated in December 1990 and deployed to Southwest Asia. Its circumstances illustrate both the weaknesses and the strengths of these detachments. The unit consisted of four personnel: two nurse anesthetists; a commander, anesthesiologist who had never trained with the unit prior to the call up, but had received constructive training credit for duties performed at the Mayo Clinic, Rochester, Minnesota; and an enlisted technician. The nurse anesthetists had been running the unit day-to-day for several years. When the unit arrived at the mobilization station, the commander took over without knowing much about the unit or the personnel, and it took some time for the unit members to get to know each other and learn to function as a team. Mobilization processing at Fort McCoy, Wisconsin went well; the unit received good support; and it deployed after two weeks. When the unit arrived in Saudi Arabia, however, the 12th Evacuation Hospital to which it was assigned did not know they were coming and it took awhile for them to be utilized productively. Mail support was poor because an erroneous APO number had been assigned at Fort McCoy, and it took six weeks to correct. Once they were finally employed, the team worked two 12-hour shifts, seven days per week with many coalition and US accident victims, a few US casualties, and many EPWs. There were problems with inadequate backup for medical equipment and the fact that the unit could not get all of its people, with their personal, organizational, and medical equipment into the one CUCV authorized for transportation. While in Saudi Arabia, the detachment learned that they could not depend on the hospital to which they were attached for support, and they believe that for future operations they need enough equipment and transportation to be self-sufficient.⁹³

Tactical Medical Support

As the plan for the ground campaign developed, it was necessary to improvise to provide tactical medical support. The doctrinal medical support system envisioned a more or less stable front line from which wounded personnel would be passed back through intermediate medical facilities to hospitals safely located in the rear areas. In DESERT STORM--the first AirLand Battle--these conditions would not apply. The two corps would jump off from the Saudi border and move rapidly north into Iraq and then eastward to isolate Kuwait. XVIII Airborne Corps would execute a wide envelopment to the west, while VII Corps would punch through directly northward just west of Kuwait and attack the Iraqi Republican Guards.

The distances and high rates of advance in the campaign plan posed difficulties for medical support. Even the MASHes and Combat Support Hospitals designed specifically for close support of the combat forces were only 25% mobile with their own vehicles, and the larger evacuation and field hospitals were practically immobile, requiring many lifts by heavy trucks to move at all. The lack of medical tactical mobility applied, however, to the assemblages and not the staff. To provide medical support the health care providers had to be there with some

equipment, and the solution was different for each corps. In XVIII Airborne Corps, the combat units would be moving too fast and too far for the medical units to keep up, and the solution adopted there was to form Forward Surgical Teams to perform emergency surgery on combat casualties followed by rapid evacuation to EAC hospitals. For VII Corps, the solution was to preload the hospitals on low-boy trailers and move them up behind the combat elements to set up hospitals in Iraq close behind the fighting.⁹⁴

In order to support the corps, the EAC hospitals had to be set up near the line of departure to minimize the distances that patients would have to be moved. Accordingly, the evacuation hospitals of the 3rd Medical Command were placed at KKMCC, adjacent to evacuation hospitals of XVIII Airborne Corps.

The system for tactical medical support would focus on resuscitative surgery as far forward as possible to stabilize the wounded soldier followed by rapid evacuation (by air preferably) to a hospital. Due to the large distances involved in the ground campaign, even the UH-1 and Blackhawk helicopters dedicated to the medical evacuation mission would have insufficient range to get patients back to the evacuation hospitals at the border, so Air Force STOL and VSTOL aircraft were also included in the evacuation plan.

Tactical evacuation was handled by the clearing companies and the ambulance units under medical battalions. Patients would be evacuated from battalion aid stations to clearing stations where they would be sorted for appropriate care. Some would be treated and released; others would be evacuated to a hospital; and some would be evacuated from the theater. A clearing company was stationed at Riyadh Airfield to hold and treat patients waiting evacuation from the theater to Germany. There were also clearing companies at KKMCC and King Fahd International Airport.⁹⁵

The 217th Medical Battalion

During the Ground War, the 217th Medical Battalion, ARNG, commanded by Lieutenant Colonel Dale W. Howard, MSC, was in direct support of the 1st Cavalry Division and the 2nd Armored Cavalry Regiment of VII Corps.⁹⁶ The 217th was subordinated to the 341st Medical Group, which was under the 332nd Medical Brigade--both USAR units. Figure 16 shows the organization and strength of the 217th Medical Battalion for its combat mission.

Figure 16.

Organization of the 217th Medical Battalion

Unit	Str	Compo	Home Station
217th Medical Battalion	35	ARNG	Aurora, CO
730th Clearing Company	140	ARNG	Winner, SD
42d Ambulance Company	109	AC	Flak Kaserne, Germany
273d Helicopter Ambulance Det	53	USAR	Conroe, TX
316th Helicopter Ambulance Det	49	USAR	Elyria, OH
321st Helicopter Ambulance Det	53	USAR	Salt Lake City, UT
Total	436		

The 217th Medical Battalion Headquarters and its attached units assembled at the main support base area of the 1st Cavalry Division on 27 and 28 January 1991 and started providing area support to troops in the area and preparing to support offensive combat operations, including aeromedical evacuation, with 15 UH-1 helicopters.

The 217th had a confusing path to its combat mission. After arriving in Saudi Arabia in January 1991, the battalion headquarters was assigned to three different medical groups in three weeks in support of five different divisions, before settling down with the 341st Medical Group and the 1st Cavalry Division. During that time, its subordinate units had changed continuously also.

The 316th Helicopter Ambulance Detachment, commanded by Major Ernest Hollo, Jr., also had a time getting to its combat mission. The unit arrived in Dhahran at 0100 on 6 January 1991, spent two weeks at Dammam waiting for equipment and supplies, then moved to the VII Corps area, where it performed aviation training and was assigned to three different medical battalions, and finally was assigned to the 217th Medical Battalion for the ground combat operation. The 316th found that little preparation had been made in the medical structure to meet the unique requirements of the AMEDD aviation units, and it was necessary to obtain support from non-medical aviation units. The 316th had the foresight to bring a lot of supplies with it from home station, but other units that had counted on support from the theater logistical system had to wait for weeks or months to be able to accomplish their missions.⁹⁷ The 316th and the other helicopter ambulance detachments of the 217th were able to perform the MEDEVACs needed to get the casualties to the hospitals quickly.

Once the 217th Medical Battalion attained its final configuration, the unit was faced with mobility and organizational problems related to supporting two major armored organizations at the same time. Additional vehicles were obtained to make the units of the battalion 100% mobile, and a separate Task Force 217 under command of the battalion executive officer was formed to provide support to the 2nd Armored Cavalry Regiment.

At 0815 on 27 February 1991, the battalion (-) moved forward into Iraq with the Forward Area Support Team of the 1st Cavalry Division. While the main body of the battalion remained at Log Base Nellingen, a forward task force under the battalion commander moved forward to the 1st and 2nd Brigades and set up medical clearing patient care and ground and air evacuation operations. The forward task force, consisting of the battalion's tactical operations center, one platoon of the 730th Clearing Company, the 42nd Ambulance Company (-) (with 1 platoon), and the operating elements of the 316th and 273rd Helicopter Ambulance Detachments, provided medical support to the combat elements of the division. The main element, consisting of the rear headquarters of the battalion, the 730th Clearing Company (with 1 platoon), and the administrative and supply elements of the other units, supported divisional and non-divisional units in the vicinity of Log Base Nellingen, including evacuation. The medical evacuation path for the first part of the combat operation was to the 148th Evacuation Hospital, ARNG, and after attaining final objectives, to the 475th MASH, ARNG.

Task Force 217, consisting of a clearing platoon, an ambulance platoon, and the 321st Helicopter Ambulance Detachment, moved to the 2nd Armored Cavalry Regiment area on 18 February 1991 and prepared to support the regiment in offensive operations. Task Force 217 moved with the regiment and crossed into Iraq on 24 February 1991. Clearing personnel operated in shifts around the clock; ground ambulances were sent forward to support the cavalry squadrons and attached artillery; and air ambulances were set up to run MEDEVAC missions. Task Force 217 stayed with the 2nd Armored Cavalry Regiment as it moved into Kuwait on 1 March 1991 and provided continuous medical support until 5 March 1991.

The 345th Combat Support Hospital

The main body of the 345th Combat Support Hospital, USAR, Jacksonville, Florida, arrived in Southwest Asia on 14 January 1991, under the command of Colonel John E. Butler, MC.⁹⁸ The next two weeks were spent at Dammam under the 127th Medical Group acquiring transportation and life support assets. From 25 to 28 January 1991, the unit moved in increments to a forward assembly area, where it was selected to reconfigure into a MASH because it was such a capable unit. It sent 70 of its personnel to other units and received 30 personnel from the 115th MASH (DC ARNG) with which it merged. The 345th MASH was then reassigned to the 341st Medical Group.

On 1 February 1991, the reconfigured 345th moved again to another assembly area along with the 341st Medical Group Headquarters and the 159th MASH, ARMC, to support the 3rd Armored Division of VII Corps. There the unit received DEPMEDS equipment, tentage, and additional life support and medical supplies. The original set of combat support hospital DEPMEDS that had been stored in POMCUS in Germany for the 345th was sent instead to the 31st Combat Support Hospital, an AC unit from Germany, and the 345th used the equipment originally destined for the 115th MASH. Later, after the war, this movement back and forth of all of this equipment caused some problems for the 345th, which was required to perform an inventory of all the durable and non-expendable items in its original POMCUS DEPMEDS set that it had never seen, possessed, or used.

On 20 and 21 February the 345th moved into Iraq behind the advancing 3rd Armored Division. In accordance with the plan, the 159th MASH set up a short distance inside Iraq, while the 345th remained loaded on vehicles to follow the advance deeper into Iraq as the ground war evolved. On 2 March 1991, the 345th moved into the northwestern Iraqi-Kuwait border area with orders to move into Kuwait. Instead, because of the cease fire, the 345th, still loaded on vehicles, moved back into Saudi Arabia arriving back at their original jump off location on 5 April 1991. Throughout the entire war, the 345th equipment remained loaded on 63 vehicles, including 26 flat bed trucks, 21 5-ton trucks, and 7 2½-ton trucks, that stretched 4 miles in convoy. Despite difficulties in keeping up with the fast moving columns of the 3rd Armored Division, the 345th was ready to set up to receive casualties if the war had continued.

Evacuation

Evacuation of casualties was a major concern in the fast moving operation conducted by ARCENT. Tactical evacuation in the corps was backed up by both Army units operating under the 3rd MEDCOM and the Air Force. Figure 17 shows the allocation of evacuation assets in the theater. In addition to the number of ambulances shown, many buses and commercial vehicles were converted for use in medical evacuation. The helicopters flew over 18,000 hours on evacuation missions, about 28% at night, and carried just over 6,000 patients.⁹⁹

Figure 17.

Army Medical Evacuation Assets in Southwest Asia

	UH-60	UH-1	Ambulances
173d Medical Group (Dhahran)	12	12	36
244th Medical Group (Riyadh)	-	6	36
803d Medical Group (KKMC)	-	24	36
332d Medical Brigade (VII Corps)	15	79	144
44th Medical Brigade (XVIII Corps)	25	54	144
Total	52	175	396

At the EAC level, the 477th Medical Company (Ambulance), USAR, Duluth, Minnesota, commanded by Captain Richard Kuznia transported over 8,000 patients during the almost five months it was in Southwest Asia. The unit was activated on 21 November 1990 and processed at Fort McCoy, Wisconsin, arriving in Saudi Arabia on 12 January 1991. Four days after the unit personnel arrived by air, the ambulances--22 HMMVs and 12 CUCVs--arrived by ship. They also picked up in the theater 4 Mercedes Benz commercial ambulances and 12 school buses, which they converted into litter ambulances. The company was assigned to the 803rd Medical Group--a USAR unit from Boston, Massachusetts. Many of the patients transported were Iraqi prisoners and displaced civilians. According to First Sergeant Roger E. Mortensen, the unit did well in the Gulf and are proud of what they did. They did not, however, fare well in awards because of what the First Sergeant terms "lack of support" from the 803rd Medical Group.¹⁰⁰

Army medical personnel thought the Air Force's strategic aeromedical evacuation system was poor, while the tactical air evacuation system was effective. Air Force medical evacuation personnel, according to some reports, were unhelpful and did not appear to understand that their mission was to help in the evacuation process. The Air Force made it clear that certain patients would not be evacuated using Air Force personnel and equipment. For example, a patient requiring a ventilator would have to be accompanied by an Army physician, a nurse or respiratory therapist, and the ventilator.¹⁰¹ Some Air Force hospitals in the theater refused to receive patients or participate in the air evacuation system. Air Force medical personnel refused to off load patients from aircraft or provide care at an airfield, so the Army had to locate a patient care facility there.¹⁰² In the United Arab Emirates, the Air Force could not provide

the personnel to perform their doctrinal mission, so the 129th Evacuation Hospital, USAR, from San Diego established an Aeromedical Staging Facility (ASF) at Dubai International Airport. Basically, this was a 54 bed mini-hospital which was secured by Emirate military forces and served to stage a few U.S. and Allied air evacuees who were awaiting evacuation aircraft for disease or non-battle injuries.¹⁰³ Evacuation of large numbers of casualties under this approach would have diverted many Army health care providers from tactical medical support.

Theater Medical Command and Control

Command and control of medical units in the theater was and remains a contentious matter that includes some traditional elements--doctors versus administrators, and AC versus RC--but also some new elements that have to do with the way medical units operate in support of mobile forces.

The dominant leader in the theater medical structure was Colonel Demetrios Tsoulos, the ARCENT Surgeon and ultimately, also, the commander of the 3rd Medical Command. Colonel Tsoulos is a physician and surgeon with broad experience in all aspects of AMEDD operations. When Iraq invaded Kuwait on 2 August 1990, Colonel Tsoulos was halfway through a 4 year tour of duty in the United Kingdom as a liaison officer to the British Medical Department. He was selected to become the ARCENT Surgeon, reported to Third US Army on 12 August 1990, arrived in Saudi Arabia on 28 August, and immediately became indispensable to Lieutenant General John J. Yeosock, the ARCENT Commander.

From August until December, the 44th Medical Brigade of the XVIII Airborne Corps exercised command of all Army medical units in the theater--a difficult job. With the arrival of VII Corps in December and the subsequent arrival of large numbers of medical units from Europe and CONUS, it became necessary to establish a medical command and control element at EAC. This function was assumed initially by the ARCENT Surgeon's office--about 40 personnel, but as new units arrived the command and control structure evolved. On 5 December 1990, a Provisional Medical Group became operational to command and control EAC medical units. On 26 December 1990, the provisional Medical Command--later the 3rd Medical Command--was activated to take command over all EAC medical units, including those sharing host nation hospitals. Colonel Tsoulos, the Third Army Surgeon, was dual-hatted as the MEDCOM commander. Personnel to staff the MEDCOM were obtained from the ARCENT Surgeon's Office and the 202nd Medical Group, a National Guard headquarters from Jacksonville, Florida.¹⁰⁴ The 566th Medical Detachment--a company headquarters--became the headquarters company for the new MEDCOM.¹⁰⁵ The top level medical command and control structure for the theater is shown in Figure 18.

Figure 18.

ARCENT Medical Command and Control Structure
Echelons Above Corps

3d Medical Command (AC)	COL Demetrios Tsoulos, MC
173d Medical Group (USAR)	COL Douglas A. Stephens, MS
202d Medical Group (ARNG)	COL Spessard Boatright, SC
244th Medical Group (ARNG)	COL Thomas P. Meany, MS
803d Medical Group (USAR)	COL Richard H. Kennedy, MS

VII Corps

332d Medical Brigade (USAR)	BG Michael D. Strong, MC
30th Medical Group (AC)	COL Jess Fulfer, MS
127th Medical Group (ARNG)	COL Dalton E. Diamond, MC
341st Medical Group (USAR)	COL Robert Smith, MS

XVIII Airborne Corps

44th Medical Brigade (AC)	COL Jerome V. Foust, MS
1st Medical Group (AC)	COL Eldon Ideus, MS
62d Medical Group (AC)	COL William Ethington, MS

One of the anomalies of this structure is the fact that the senior AMEDD officer in the theater, Brigadier General Michael D. Strong, MC, US Army Reserve, was in a subordinate position to Colonel Tsoulos. General Strong was the commander of the 332nd Medical Brigade, which had been the CAPSTONE senior medical headquarters for Third US Army for many years and had participated fully in medical planning and exercises for the theater, including Exercise INTERNAL LOOK in July 1990. However, the incremental nature of the RC call up and the low priority accorded to both medical units and headquarters created uncertainty as to the availability of the 332nd, even after authority to call up Reserve units was obtained.

After VII Corps started moving into the theater and a real EAC medical structure became necessary during November 1990 to support two corps, the ARCENT Surgeon's office became a de facto command and control headquarters for those medical units not assigned to the two corps. The 44th Medical Brigade had deployed with XVIII Airborne Corps, but a medical brigade was needed for VII Corps. There were two medical brigades on the deployment list, the 213th Medical Brigade, an ARNG headquarters from Mississippi; which was CAPSTONE to VII Corps, and the 332nd for EAC. In November 1990, however, General Yeosock decided that a medical brigade headquarters was not needed for EAC because the ARCENT Surgeon's office could do that job, and so a message was sent asking for the ARNG brigade headquarters but canceling the call up and deployment of the 332nd. By the time this message arrived at FORSCOM, however, the 332nd had already been called up and was en route, so the mobilization of the ARNG brigade headquarters from Mississippi was canceled, and the 332nd Medical Brigade deployed as the medical headquarters to support VII Corps.¹⁰⁶

According to Colonel Tsoulos, the 332nd Medical Brigade did not do well as a headquarters because the staff was not strong and had internal problems. The medical brigades for both of the corps were under the command of their respective corps support commands (COSCOMs), and the Commander of the 2d COSCOM (VII Corps) found it necessary to merge the 332nd staff with that of the AC 30th Medical Group Headquarters to have an effective medical command and control capability. In effect, the 30th Medical Group "ran the show."¹⁰⁷

In large part, BG Robert McFarlin, the Commander of the 2d COSCOM agreed with Colonel Tsoulos. He confirmed that the 30th Medical Group headquarters was merged with the 332d Medical Brigade headquarters to assist in command and control of the large medical structure in the corps. As he explained the circumstances, the 332d was an EAC brigade and knew nothing about corps operations. The staff was not familiar with division and corps tactics or the staff planning to support them in such areas as MEDEVAC and medical supply. They were understaffed for the corps mission as well, having only about 70 personnel in the headquarters while they needed twice that number. BG McFarlin had no medical staff or surgeon on his staff because he arrived in the theater at ALO4 and grew while preparing to support corps operations. In the beginning he expected the 332d headquarters to provide the technical expertise that a COSCOM surgeon's staff would normally have. Since they were unfamiliar with corps operations they were initially ineffective and he (BG McFarlin) had to dispense much guidance.¹⁰⁸

BG McFarlin realized he had to correct the problems quickly, as combat operations became imminent and the medical assets in the corps continued to grow to an eventual structure of 15 hospitals functioning under three groups, an area support battalion, and a MEDSOM. Effective supervision of that structure required more staff for around-the-clock operations, and the 332d was not doing the job. Accordingly, it became necessary to augment the 332d

headquarters by merging the 30th Medical Group headquarters into it. Eventually, the 332d after being augmented by the 30th Group, the VII Corps surgeon's staff section, and a few talented people plucked from the Brigade's subordinate elements, became functional and got the job done. BG McFarlin disagreed somewhat with Colonel Tsoulos' assessment that the 30th Medical Group "ran the show". They certainly helped, but BG Strong and his staff must get the credit for "running the show" once they had some assets which were experienced in corps-level medical operations.¹⁰⁹

The views of Colonel Tsoulos, and BG McFarlin, to a lesser extent, are disputed by BG Strong, members of the 332d Medical Brigade staff, and by Colonel Griffin, the VII Corps surgeon during Operation DESERT STORM, who functioned as the 332d Brigade's deputy commander for support. The counterarguments are presented here for balance.

These personnel recognize the lack of training within the Brigade for corps-level operations. They are also very realistic that the mobilization strength of 72 personnel in the headquarters was much too shallow for 24-hour operations on a sustained basis. Staff representatives of the command admit that in late December 1990 and early January 1991 the Brigade struggled as did other subordinate commands of the corps. The pace of deployment; the extremely harsh conditions along the Tapline Road; the erratic flow of units, and information about them from CONUS; poor communications; numerous changes to the battle plans; and complicated logistics problems made staff work very difficult for a staff that was undermanned from the beginning.¹¹⁰

Because of this, BG Strong relates that on 8 January 1991, BG McFarlin insisted that the Brigade combine with the 30th Medical Group, an AC organization which had deployed from Germany. Just prior to that, the Deputy Corps Commander had approved BG Strong's suggestion that the corps surgeon section be merged with his headquarters. At that point the Brigade staff was deep enough and experienced enough in corps operations to do the requisite planning for proper medical support. The former commander of the 30th Medical Group joined the Brigade as Deputy Commander for Operations and the former Corps Surgeon became Deputy Commander for Support. The final result was a command and control structure that had an Army Reserve medical officer triple-hatted as the Corps Surgeon, the COSCOM Surgeon, and the Medical Brigade Commander. He was supported by three colonels -- one medical corps AC and two medical service corps (one AC and one USAR), with a mixed staff of AC, USAR, and ARNG personnel.¹¹¹ From that point on, a proactive Total Army cooperative spirit ensured the Brigade's ability to do the planning and control of the sixty other units, which had never worked together under the 332d, but which had the mission to support a deep corps sector during highly mobile warfare.

While there are differing views of the 332d Medical Brigade's performance during the build-up phase in Saudi Arabia, there can be no doubt that during DESERT STORM a Total Army effort successfully met the mission requirements.

Four medical group headquarters--2 National Guard and 2 Army Reserve--operated under the 3rd MEDCOM. The 244th Medical Group was collocated at Riyadh with the 3rd MEDCOM as noted previously. The 202nd Medical Group was located at Riyadh and supervised some of the hospitals that worked at Saudi and UAE facilities. The 173rd Medical Group provided area coverage at Dhahran, and the 803rd Medical Group did the same at KKMC. According to Colonel Tsoulos, the 202nd Group did a good job, and the 244th Group under Colonel Tom Meany did "a superb job." Partly because of a lack of knowledge and partly because of a lack of urgency, the other two group headquarters did not do as well.¹¹² Overall, the RC medical unit commanders did as well as their AC counterparts. Two hospital commanders were relieved during the operation--one AC and one RC. The problem with hospital commanders was caused partly by the practice of having MSC lieutenant colonels command hospitals in peacetime, then reverting to deputies when MC colonels moved in to the deployable hospitals just before deployment. Many of the MC commanders really did not know how to run a hospital in the field. In other cases, the decision not to allow pre-designated commanders to go to TOE hospitals caused problems at the top. Also, some hospital commanders, while excellent physicians, were simply not suited or trained for command.¹¹³

The medical command and control structure also demonstrates the tension between the Medical Corps officers running the hospitals and the Medical Service Corps Officers commanding the group and brigade headquarters. Among the top nine commanders, only three--General Strong, Colonel Tsoulos, and Colonel Diamond--were physicians.

The Medical Service Corps traditionally performs most administrative and logistics functions for the AMMED. This was all right with the doctors--as long as they stayed in charge. However, gradually over many years the MSC officers became the commanders of units--TOE hospitals (in peacetime) and medical battalions, groups, and brigades. This situation--which parallels in many respects the same condition found in civilian health care--has created tension between the doctors and the administrators. Doctors perceive that the administrators are insensitive to the needs of the patients and because they are not doctors are unqualified to make decisions on medical care. MSC officers understand the predicament but believe that doctors simply don't know how to run either a military unit or a hospital. The general inability to find an acceptable solution to this situation is reflected in the after action reports.

Theater Medical Workload

Although combat was short and favorable, the medical workload was substantial. Total outpatient visits in the theater totalled just over 194,000, and 7,664 personnel were evacuated to Europe, of whom 4,810 were further evacuated to CONUS.¹¹⁴ Almost 23,000 personnel were hospitalized in Army hospitals, and Figure 19 shows the breakout of these patients by type.¹¹⁵

Figure 19.

Patients Hospitalized in ARCENT Hospitals

US Army personnel:	16,951
USAF, Navy, & USMC personnel:	302
Coalition mil/ civ personnel:	3,151
Enemy Prisoners of War:	1,404
Displaced civilians:	<u>935</u>
Total Patients:	22,743

Because the combat casualties and DNBI were much lower than expected, the medical forces were underutilized, and there was time to do some higher level "fancy" medical procedures. The six months it took from the Iraqi invasion of Kuwait until the Coalition ground attack made it possible to procure and issue new medical equipment.¹¹⁶

Reservists had more health problems than the AC personnel, primarily because they tended to be older. There were nine fatal heart attacks in the theater during the war--all Reservists.¹¹⁷ Reservists also suffered the greatest single loss to enemy action when a SCUD missile hit a barracks in Dhahran occupied by the 14th QM Detachment (Water Supply) from Greensburg, Pennsylvania, killing 28 and wounding 96 others.¹¹⁸ Although the medical response was excellent--the first helicopters arrived on the scene 13 minutes after the explosion--the losses were large. After the war, some soldiers--so far only Reservists--reported strange symptoms they attribute to their wartime service, despite lack of a consistent pattern in their exposure to various possible causes, such as smoke from the oil field fires in Kuwait. This remains a mystery and seems to be increasing.¹¹⁹

Some RC medical personnel had experience in Vietnam or Korea and knew about providing the traditional medical care in the field, but this was not taught to the younger MC people. The trick is to provide the same high quality care as is done in peacetime, but to do it

different'ly as dictated by the realities of the battlefield. For example, a neurosurgeon operating in a forward surgical team cannot rely on having a CAT SCAN to assist the diagnosis. There were two mobile CAT SCAN machines per corps in the theater, but these would have been overloaded and generally too slow to help, and it would have been necessary to practice without them in most cases. One surgeon in a MASH was concerned about not having the fine sutures he preferred to close (sew up) the incisions on his patients after completing surgery and was informed that in a MASH that was of no importance because he would not be closing the wounds, just fixing the damage and sending the patient back to a larger facility. In combat, it is necessary to perform "cookbook surgery" in accordance with protocols established by the Academy of Health Sciences, but too many surgeons were unaware of this approach.¹²⁰

Some of the work done in the theater under field conditions was remarkable. In January 1991 a thoracic surgeon from the National Guard did a double coronary bypass operation on another Reservist using a heart pump at the MODA hospital in Riyadh. In April 1991, an expatriate surgeon performed a double coronary bypass on a Reserve colonel--himself a thoracic surgeon.¹²¹

Reserve Contribution

Quantitatively, the RC contribution to medical support in the theater was substantial--65%. The quality of that support has been questioned by some of the AC medical personnel. Colonel Tsoulos, while admitting that neither the AC nor the RC units were particularly well trained to operate military hospitals in a combat theater, faults the RC hospitals for inability to operate as trained units. As individuals, the RC medical personnel were technically very competent, but they appeared to have difficulties in working together. In this respect, Colonel Tsoulos says that the AC system of bringing in health care providers as individual fillers to hospitals did not work well either.¹²²

Both AC and RC hospitals varied in quality, generally according to the capability of the commander, but also dependent on the amount of realistic field training they had done. The 5th MASH, Fort Bragg, 8th Evacuation, Fort Ord, and the 47th Field, Fort Lewis, had done good training, and their excellent performance showed it. The 144th Evacuation Hospital, Utah National Guard, did a magnificent job, primarily because it had done realistic training for three years at Fort Ord with the 8th Evacuation Hospital, and because the 144th Evac had strong NCOs. Many units, however, simply did not know how to operate as a military hospital in the field--something quite different from a civilian hospital or even a military hospital in CONUS.¹²³

The general problem in both AC and RC medical units was that the health care providers did not train sufficiently with their units in peacetime. AC PROFIS personnel were supposed to train with their designated units, but the mobilization demonstrated that this had not been done enough or well. RC units had adopted training programs for their health care providers that stressed medical content and discouraged participation in military aspects. Except for a few who insisted on military training, most RC doctors and nurses trained at major civilian medical centers because this was thought to improve retention. However, the result was that most of the TOE medical units and hospitals had to learn from scratch how to function in the field.

Special Medical Support

In addition to the general medical support provisions described above, there are several special forms of medical support that were small but important. These include dental service, blood supply, medical logistics, mental health, veterinary service, and preventive medicine. Each of these operated as a smaller sub-system within the overall medical support system, and each relied heavily on Reserve units and personnel for operational success.

Dental Services

The dental care strategy was to limit the amount of dental work to be done in Southwest Asia to the bare minimum of emergency treatment by assuring that necessary dental work was done in CONUS prior to deployment. This meant that dental examinations had to be performed on all deploying soldiers, and either performing essential dental work or exempting the soldier from deployment on dental grounds. This turned out to be a big job and involved, among other things, removing orthodontic appliances from soldiers in active treatment and then replacing them when the soldiers returned to CONUS.¹²⁴

One reason for the large dental workload was the poor condition of oral health fitness found in RC units. Unlike AC personnel, whose dental care is provided by the Army, RC soldiers have to pay for their dental care unless they have a dental emergency while on active duty for training. Dental fitness is classified into four classes: Class 1 soldiers need no treatment; Class 2 soldiers are unlikely to have a dental emergency in the next 12 months; Class 3 soldiers are likely to have a dental emergency in the next 12 months; and Class 4 soldiers have either not been examined in 2 years or do not have a valid dental panoramic radiograph (panograph). For Operation DESERT STORM, soldiers in Class 1 and 2 could be deployed without dental treatment, but those in Class 3 could not because the Army did not want to establish a large dental capability in the theater. While only 17% of the AC soldiers processed for deployment were in Classes 3 and 4, 52% of the RC soldiers were. Soldiers in these classes

required extra attention and time during mobilization or deployment processing to bring them up into Class 1 or 2.

The panograph was a particular problem. After it proved impossible to identify all of the victims of a December 1985 crash in Gander, Newfoundland, of a chartered airliner carrying several hundred Army soldiers, DOD established a program to identify each member of the Armed Forces positively from dental records. Each military person was required to have a current panographic x-ray in his or her dental records, but in the Gander incident the records had been accompanying the personnel on the flight and had been destroyed in the crash. Accordingly, a program was established to maintain a duplicate copy of each panograph in a safe location. Thus, the current requirement is that a copy of each panograph be on file at the DOD Central Panograph Storage Facility, Monterey, California. Over the years since 1985, this requirement had fallen into a low priority matter of mere routine, so that about 22% of the RC soldiers had to have panographs made before they could deploy.¹²⁵

Most of the dental work was done in CONUS in HSC DENTACs. Only five dental service detachments--all Active Component--were sent to Southwest Asia, most of them from Germany. This was only one-quarter of the detachments recommended by the Chief of Dental Services, but it sufficed because of the short duration of the war.¹²⁶ Four RC dental detachments were sent to Germany to replace those sent to Saudi Arabia. Eight RC dental service detachments were activated to augment existing AC dental units in CONUS. Figure 20 shows the allocation of Dental units.

Figure 20.

Employment of Dental Service Detachments for DESERT STORM

<u>Unit</u>	<u>Compo</u>	<u>Home Station</u>
<u>Deployed to Southwest Asia</u>		
2d Dental Service Detachment	AC	Heidelberg, Germany
87th Dental Service Detachment	AC	Nurnburg, Germany
122d Dental Service Detachment	AC	Frankfurt, Germany
123d Dental Service Detachment	AC	Wurzburg, Germany
257th Dental Service Detachment	AC	Fort Bragg, NC

Figure 20. (Continued)
Deployed to Europe

300th Dental Service Detachment	USAR	Beilmore, NY
308th Dental Service Detachment	USAR	Fort Sheridan, IL
204th Dental Service Detachment	ARNG	Little Rock, AR
919th Dental Service Detachment	USAR	Aurora, CO

Employed in CONUS (All USAR)

Unit	Home Station	Duty Station
1204th Dental Service Det	Flushing, NY	Fort Dix, NJ
1205th Dental Service Det	Utica, NY	Fort Sill, OK
1206th Dental Service Det	Dover, NJ	Fort Leonard Wood, MO
2287th Dental Service Det	Rockville, MD	Fort Bliss, TX
2288th Dental Service Det	Sharonville, OH	Fort Campbell, KY
3295th Dental Service Det	Niagara Falls, NY	Fort McClellan, AL
3298th Dental Service Det	Brooklyn, NY	Fort Jackson, SC
3299th Dental Service Det	Chamblee, GA	Fort Benning, GA
3342d Dental Service Det	Miami, FL	Fort Jackson, SC
3346th Dental Service Det	Fort Knox, KY	Fort Knox, KY
4005th Dental Service Det	Houston, TX	Fort Sam Houston, TX
5504th Dental Service Det	Springfield, MO	Fort Leonard Wood, MO
5505th Dental Service Det	Fort Ben Harrison, IN	Fort Knox, KY
5506th Dental Service Det	St Louis, MO	Fort Leonard Wood, MO
5507th Dental Service Det	Madison, WI	Fort Lewis, WA
6254th Dental Service Det	Phoenix, AZ	Fort Ord, CA
6255th Dental Service Det	Tacoma, WA	Fort Lewis, WA

Blood Supply

A literally vital function of a health care system is to provide blood to transfuse into patients undergoing surgery or bleeding from wounds or injuries. There is no substitute for blood to replace blood lost by patients.

Blood is a big item. About 12 million units (pints) of blood are drawn from donors in the United States each year, of which 200,000 units are drawn by the medical agencies of the Department of Defense. About half of the blood for civilian use is collected by the American Red Cross and the rest by private groups, many of which are members of the American Association of Blood Banks.

Blood consists of red cells, liquid plasma, and other components, but red cells that carry oxygen are what is needed by patients. Blood collected from donors is whirled on a centrifuge to pack the red cells more closely, some of the plasma is taken off, and the residual containing the red cells is either used immediately or stored in liquid or frozen form. Liquid blood has a shelf life of about 35 days, and this period can be extended for another 10 days by a rejuvenation process. Frozen blood has a shelf life of 2 years but requires careful reconstitution before it can be transfused into patients. A unit of blood consists of 450 milliliters (about a pint) of packed red blood cells.¹²⁷

At the outset of DESERT STORM, the Department of Defense put into motion a series of actions designed to obtain, process, and stockpile large quantities of blood in anticipation of casualties. Blood supply activities took place in CONUS, Europe, and the Southwest Asia Theater. Arrangements were made with the American Red Cross and the American Association of Blood Banks to receive some blood, and Blood Donor Centers were established at CONUS military installations to collect blood from voluntary donors in the military community.

The blood program was under the general direction of the Armed Services Blood Program Office (ASBPO) in Northern Virginia, which estimated blood requirements to support the forces in the theater and established quotas for all of the Military Services. The planning factor used for Operation DESERT STORM was four units of blood for each casualty or non-battle injury patient for the initial admission into the military medical system.¹²⁸

The Army Blood Program Office, in the Office of the Surgeon General tasked the Health Services Command to provide the Army's quota of blood. The HSC Blood Program Officer in turn tasked the HSC medical treatment facilities to provide blood based on the populations served by each MTF. This system placed the entire responsibility for blood collection on the medical commanders and failed to include the major commands and installations in the chain of communication and responsibility. As a result, some installation commanders were not as

enthusiastic about supporting the blood donor program as they might otherwise have been.¹²⁹

Blood Donor Centers were established at posts with large troop populations--Fort Benning, Fort Hood, Fort Sill, Fort Dix, Fort Jackson, Fort McClellan, Fort Knox, and Fort Leonard Wood. Blood donor drives were conducted at these and other posts to increase the stocks of whole blood. These were generally successful, but in the midst of the overall emergency, some installation commanders failed to appreciate the urgency of the need for blood.¹³⁰ A minor problem encountered was that many RC personnel became ineligible to donate blood because they had been immunized at home station before reporting to their mobilization stations.¹³¹ HSC found that commercial small package carriers would not pick up or deliver liquid blood shipments on weekends and holidays, leaving a 2-3 day gap in the delivery system. HSC negotiated a contract with American Airlines to handle all liquid blood deliveries at all times--and at a reduced cost.¹³²

Figure 21 shows the blood detachments employed during the operation to augment standard medical treatment facilities and provide a blood program capability in the theater. There are three types of blood detachments, each with 10-12 personnel, generally one clinical laboratory officer, a medical NCO, and medical laboratory technicians or medical supply specialists. Collection detachments draw blood from donors, test the blood, and pass it to processing detachments, where the blood is transformed into packed red blood cells or frozen. Distribution detachments staffed by medical supply specialists pack the blood products and arrange for shipment to medical treatment facilities.¹³³ The 379th Blood Bank Company is a six person command and control team designed to operate a blood program in the field.

Stocks of frozen blood, along with the equipment and supplies to reconstitute it, had been prepositioned in the CENTCOM area of operations, and some of this was made available for immediate use while the liquid blood pipeline was being established for the theater. Early in the Fall of 1990, elements of the 335th Medical Company were sent from Germany to the Southwest Asia Theater operations to expand the operations of the frozen blood depot as the 655th Blood Storage Detachment. Subsequently, the 655th was given the mission of operating the Southwest Asia Theater Blood Storage Unit (BSU) at Al Jubayl in Saudi Arabia after some problems were experienced in finding a proper unit to perform this job.¹³⁴

The 379th Blood Bank Company, under the command of Captain John Donnelly, arrived in the theater in early January 1991 and was located at KKMCC to operate the theater blood program, with the 448th Blood Processing Detachment attached. The 605th Blood Distribution Detachment was located at Dhahran and, along with the 655th Detachment, was attached to the US Army Medical Materiel Center, Saudi Arabia. The 135th Blood Distribution Detachment supported XVIII Airborne Corps, and the 387th Blood Distribution Detachment, VII Corps, as part of the MEDSOMs in their respective medical brigades.

Figure 21.

Blood Units Utilized in DESERT STORMEmployed in CONUS

334th Blood Collecting Detachment	USAR	Perrine, FL
353d Blood Collecting Detachment	USAR	Fort Bliss, TX
355th Blood Collecting Detachment	USAR	Fort Hamilton, NY
371st Blood Collecting Detachment	USAR	Weirton, WV
375th Blood Collecting Detachment	USAR	Fort Harrison, IN
392d Blood Processing Detachment	USAR	Fort Hamilton, NY
842d Blood Collecting Detachment	ARNG	Bismark, ND

Deployed to Europe:

324th Blood Collecting Detachment	USAR	Chester, PA
325th Blood Collecting Detachment	USAR	Mesquite, TX
548th Blood Processing Det	USAR	Madison, WI
1467th Blood Distribution Det	ARNG	Fort Allen, PR

Deployed to Southwest Asia

379th Blood Bank Company	USAR	Folsom, PA
448th Blood Processing Det	USAR	Fort Des Moines, IA
655th Blood Storage Detachment	AC	Germany
135th Blood Distribution Det	AC	Fort Bragg, NC
387th Blood Distribution Det	USAR	Brooklyn, NY
605th Blood Distribution Det	USAR	Fort Des Moines, IA

In Europe, the 335th Medical Company had been responsible, among other things, for operating the blood system for Europe, including collection, processing, and distribution of

blood to handle the peacetime workload there. Deployment of a portion of this unit to handle blood storage in Southwest Asia meant that Europe was short in this capability. Accordingly, in late 1990, the four RC blood detachments shown in Figure 21 were deployed to backfill the European Command to perform the day-to-day blood function and also to help with the buildup of additional stocks in the theater in anticipation of combat casualties from Southwest Asia.¹³⁵

Seven RC blood detachments were used to augment HSC MEDCENs and MEDDACs in the CONUS blood collection effort. All blood collected in CONUS was transported to the Armed Services Whole Blood Laboratory at McGuire Air Force Base, New Jersey, for shipment overseas. Thirty units of blood were packed in a styrofoam box, and 120 boxes constituted a pallet for air shipment.¹³⁶

Theater blood supply operations were under the direction of Major Bruce Sylvia, at CENTCOM. Initially, large shipments of liquid blood were shipped to the BSU in separate boxes for each blood type (A, B, O, and + or -) and had to be repacked into boxes containing a mix of blood types according to the anticipated mix in the troop units. This repackaging process took time and was a source of possible error, so later shipments from CONUS were already packed in a mixed mode.¹³⁷ Figure 22 shows the blood available in the theater and Europe on 15 February 1991, just prior to the start of the ground campaign.¹³⁸

Figure 22.

Blood Available for DESERT STORM
(Units = 450 ml packed red cells)

	<u>Frozen</u>	<u>Liquid</u>	<u>Total</u>
Southwest Asia	7,552	28,944	36,496
Europe	4,439	6,543	10,982

The blood program was a success, and adequate supplies of blood would have been available for patient care if casualties had been as heavy as projected.

Medical Logistics

Medical logistics has three major aspects: supply, optical support and maintenance. The medical logistics effort for DESERT STORM was a large and complicated effort in which HSC, the Defense Logistics Agency, the U.S. Army Medical Materiel Agency, and ARCENT worked

together to provide the equipment and supplies needed to support medical operations in CONUS, Europe, and the Southwest Asian theater.

The order to expand CONUS medical treatment facilities had logistical implications for HSC. It was necessary to provide additional medical equipment to the designated casualty reception hospitals on an "as needed" basis because prepositioned war reserve stocks were judged insufficient to cover all requirements. Allocation of medical equipment was particularly difficult because the numbers and types of casualties to be received were not known. Blanket purchasing agreements allowed the medical treatment facilities to purchase or rent equipment as needed, for short periods of time, and upon short notice.¹³⁹

HSC also provided extensive logistical support to the deploying units by transferring 217 items of equipment worth \$378,000 and providing medical supplies worth over \$42 million.¹⁴⁰ HSC health care providers transferred to TOE medical units often taking with them medical equipment which was not authorized in their new units. This left HSC facilities short of equipment, while deployable units had excess, often unauthorized equipment. This situation resulted from a lack of clear instructions from HSC and FORSCOM about what equipment should be taken, if any.¹⁴¹

The Army was designated as the single manager for all Class VIII medical supplies for all Services in the Southwest Asia theater. To perform this mission, five Medical Supply, Optical, and Maintenance Units (MEDSOMs) and six additional units were deployed to the theater. A MEDSOM is a battalion sized unit of about 200 personnel commanded by a lieutenant colonel. It is designed to provide complete logistical support for medical units, including the manufacture of eyeglasses. Two of the MEDSOMs were integrated to form the US Army Medical Materiel Center Saudi Arabia (USAMMCSA), which served as the primary center for resupply of medical items for all units, particularly those equipped with DEPMEDS assemblages.¹⁴²

The first MEDSOM in the theater was the 32nd, which arrived in late August 1990 and was responsible for the initial buildup of the medical logistical system. By early October, the 32nd MEDSOM took over as the single manager for all medical supplies for the theater. Upon arrival of the 47th MEDSOM in mid-October 1990, the two units were task organized into the United States Army Medical Materiel Center, Saudi Arabia (USMMCSA), located at Dhahran, under the 44th Medical Brigade. The combination of two MEDSOMs into a single medical depot-like organization was an innovation that proved valuable in handling the large volumes of medical supplies that poured into the theater.¹⁴³ The two battalions maintained separate identity for administration but combined their logistical operations capabilities into a single medical depot.

In December 1990, the arrival of VII Corps from Germany and the prospect of offensive action, stimulated a reorganization of the medical logistical structure. The 32nd MEDSOM was pulled out of USAMMCSA to support XVIII Airborne Corps; the 428th MEDSOM arrived from Germany to support VII Corps; and the Reserve units started arriving. USAMMCSA, commanded by Lieutenant Colonel Richard Ursone, became directly subordinate to the 3rd Medical Command, and the 980th MEDSOM, ARNG, under the command of Lieutenant Colonel Jeffrey L. Gidley, replaced the 32nd MEDSOM in the USAMMCSA organization, while the 145th MEDSOM, USAR, commanded by Lieutenant Colonel Gene R. Johnson, was located in Riyadh to support the Western region of the theater.¹⁴⁴ Two Reserve inventory control units were assigned to assist in operating the Theater Medical Materiel Information System (TAMMIS), and two Reserve and one Active medical equipment maintenance detachments filled out the medical logistics structure. Figure 23 shows the medical logistical organization in Southwest Asia just prior to the start of the ground campaign.

In Europe, the U. S. Army Medical Materiel Center, Europe, received all requisitions from USAMMCSA, filled those it could, and passed the rest to the Defense Personnel Support Center, Philadelphia, PA. The 324th MEDSOM Battalion, a Reserve unit from Chester, PA, commanded by Lieutenant Colonel M. James Kimmel, deployed to Europe to replace the 428th MEDSOM.

USAMMCSA maintained stocks of 5,000 line items with an aggregate value of over \$100 million and processed over 275,000 customer requests for supplies and equipment valued at over \$200 million. The medical logisticians handled an average of 100 pallets per day of air cargo during the operation.¹⁴⁵ Except for some items required by Navy hospital ships that were unavailable from Army sources, USAMMCSA provided effective medical logistical support for eight Army divisions, five Navy hospitals (including two hospital ships), two Marine Expeditionary Forces, 44 Army hospitals, and other combat and support units in Southwest Asia.¹⁴⁶

Figure 23.

Medical Logistics Organization in Southwest AsiaUS Army Medical Materiel Center Saudi Arabia (USAMMCSA)

47th MEDSOM Battalion	AC	Fort Hood, TX
980th MEDSOM Battalion	ARNG	Sacramento, CA
402d Inventory Control Det	USAR	Chester, PA
484th Inventory Control Det	USAR	Kalamazoo, MI
220th Medical Maintenance Det	USAR	Madison, WI

ARCENT Echelons Above Corps

145th MEDSOM Battalion	USAR	Texarkana, TX
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VII Corps

428th MEDSOM Battalion	AC	Pirmasens, Germany
482d Medical Maintenance Det	USAR	Milwaukee, WI

XVIII Airborne Corps

32d MEDSOM Battalion	AC	Fort Bragg, NC
261st Medical Maintenance Det	AC	Fort Benning, GA
5th Spectacle Fitting Det	AC	Fort Benning, GA

Optometrical support was a major effort also. Large numbers of eyeglasses and optical inserts for chemical protective masks were needed for both AC and RC soldiers during the war. Each AC soldier with a vision problem is required to have two pair of prescription spectacles and one pair of corrective gas mask inserts, and Reserve soldiers should have had one pair of corrective gas mask inserts. Neither of these requirements was met, causing a heavy workload to produce spectacles and inserts after mobilization was underway. There are three kinds of gas mask inserts (MCup, nylon, and wire), and there was one private producer of each type at the outbreak of the war. These producers were unable to surge production to meet demand, and additional producers could not be found in the time available.¹⁴⁷

About 270,000 additional spectacles and gas mask inserts had to be produced for Operation DESERT STORM over and above normal peacetime requirements. The additional demand exceeded the capability of the Army and Navy Optical Fabrication Laboratories, so contracts were made with four commercial manufacturers to produce eye wear to meet Army needs.¹⁴⁸ Over 265,000 spectacles and protective mask inserts were made by HSC Optometry detachments for individual soldiers.¹⁴⁹

Medical Maintenance Detachments in Southwest Asia were involved primarily in providing liquid oxygen for hospitals by filling oxygen cylinders and servicing oxygen regulators and gauges. In addition, these units also repaired general medical equipment that was mechanical in nature. Two of the three medical maintenance detachments in Southwest Asia were Army Reserve units from Wisconsin. The 220th Medical Maintenance Detachment, Madison, Wisconsin, commanded by Sergeant First Class Ray Beutler, arrived in theater on 10 December 1990 with eight personnel and was assigned initially to the US Army Medical Materiel Center, Saudi Arabia. Initially, they were used to receive, test, and pass on medical equipment arriving in Dhahran, but when the ground war started they moved to join the 428th MEDSOM in support of VII Corps by providing bottled oxygen to Army and Air Force hospitals. The 482nd Detachment, Milwaukee, commanded by Chief Warrant Officer George Lehmbeck, arrived in theater on 10 January 1991 with five of their nine authorized personnel, and was attached initially to the 428th MEDSOM and supported five hospitals with oxygen. Chief Warrant Officer Lehmbeck thought the detachment was well treated by the 428th MEDSOM but should have been allowed to retain its unit identity instead of being absorbed into the MEDSOM.¹⁵⁰

Mental Health

Another special area of attention for the medical system in the theater was mental health. During DESERT SHIELD the enemy was boredom with little to do in a harsh environment but train and wait for the unknown. This put stress on individual soldiers that required some medical attention as well as preventive measures, such as mail, sports, and morale enhancing programs. While this applied to all troops, it particularly hit the Reservists who had been torn suddenly from their civilian lives and thrust into the situation with little time for mental preparation. During DESERT STORM, combat stress became an added factor to the mental health situation. There were also continuing real or perceived problems with loved ones and families on the Home Front.¹⁵¹

Combat Stress teams were formed in the theater to provide immediate treatment for mental problems. The teams were derived from medical detachments (psychiatric). A psychiatric detachment is authorized 48 personnel: 17 officers (seven psychiatrists, one

psychologist, six social work officers, two psychiatric nurses, and an administrator) and 31 enlisted personnel (including 11 psychiatric specialists and 19 behavioral science specialists). Figure 24 shows the organization for mental health support in the theater.

Figure 24.

Combat Stress Teams in Southwest Asia

Echelons Above Corps

467th Psychiatric Detachment	USAR	Madison, WI
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VII Corps

531st Psychiatric Detachment	USAR	Baltimore, MD
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XVIII Airborne Corps

528th Psychiatric Detachment	AC	Fort Benning, GA
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Because of the emphasis on combat units in the initial deployments, the first of the psychiatric units to deploy--the 528th--did not arrive in Saudi Arabia until late October 1990. As the troop build up for DESERT SHIELD occurred during September and October, there was almost no capacity in the theater for treatment of mental problems, and as a result the only solution for stress and for minor physical complaints caused by stress was to evacuate the patients from the theater. After the 528th got in the theater and started counselling outpatients in the units, evacuation for this kind of problem dropped sharply. During DESERT SHIELD the primary cause of stress was problems--real or perceived--on the home front with spouses and families.

When the 531st Detachment was called up to active duty on 21 November 1990--just before Thanksgiving--it was unprepared to fulfill its mission because it was short psychiatrists. The commander at that time was a nuclear medicine officer--qualified as a physician but unqualified to treat stress patients--who was transferred from the unit prior to deployment. None of the positions calling for a psychiatrist was filled, and suitable fillers had to be obtained from the National AMEDD Augmentation Detachment (NAAD). Lieutenant Colonel James Hunter, a qualified psychiatrist, was assigned to be the detachment commander, but could not deploy immediately because he had never attended the officer basic course. So, Major (P) David McDuff was the acting commander of the unit during mobilization and for the first few days after the unit arrived in the theater on 10 December 1991. LTC Hunter took the crash OBC

course at the Army Medical Department School over Christmas and reported to the unit in early January 1991. One psychiatrist filler was on a sailing vacation to Spain when called up, and had to be located and mobilized. LTC Jacqueline Berrier deployed with the unit and did her job in the forward areas with courage until a younger psychiatrist could be found to take her place.¹⁵²

After its arrival in mid-December, the 531st stayed on the dock at Dammam until it could link up with the VII Corps medical units. The detachment was divided into small teams, with one team behind each of the four divisions and a team for the corps area. The team supporting the 1st Infantry Division was co-located with the divisions's main support medical company. Other teams were attached to medical task forces based on combat support hospitals and mobile surgical hospitals.

The 467th Psychiatric Detachment, commanded by Lieutenant Colonel Virginia Sincavan, was also called up to active duty on 21 November 1990 and arrived in Riyadh on 13 December 1990. The unit had only one psychiatrist when called up and also had to be filled by the NAAD. The 467th linked up with the 50th General Hospital and started taking outpatients from the units near Riyadh. In late January, as preparations for the Ground War gained momentum, the 467th was divided into four teams to put more combat stress treatment capability forward. One team was assigned to support the 528th Detachment; another augmented the 531st Detachment. The third team was stationed at King Khalid Military City with the 44th Evacuation Hospital to provide support for EAC units in that forward location; and the fourth team remained in Riyadh to continue the EAC area support mission. During the entire operation, the 467th operated an outpatient clinic at ESKAN Village and worked with chaplains and unit officers to identify and counsel personnel with potential problems. The unit gave stress briefings to arriving personnel and explained how to deal with stress. Much of the effort was directed at dealing with anxiety over SCUD attacks.¹⁵³ A seven person team of the 467th Detachment, commanded by LTC Robert Evans, remained behind during the redeployment phase to provide combat stress treatment for the remaining units. This team returned to the United States on 27 May 1991--Memorial Day.

There were many stress problems on the home front during DESERT STORM, particularly among families of Reservists who had been called to active duty. Several Reserve psychiatric detachments helped by getting involved in family support programs and counselling both Reservists and family members. The 55th Psychiatric Detachment, Indianapolis, Indiana, worked with the Department of Veterans Affairs and debriefed Indiana units upon their return from the theater. The 383rd Psychiatric Detachment, Boston, Massachusetts, volunteered to support the local family support program.

The 785th Psychiatric Detachment, St Paul, Minnesota, commanded by Major John L. Black, M.D., was disappointed at not being called up and sent to the theater, but compensated

by using training time and their own time to support the local family support network and by briefing other Reserve units going to the theater. The 785th Detachment's Family Assistance Program started in January 1991 and ran through October 1991. The 15 officers and 38 enlisted personnel of the unit took turns serving on stress management teams for two weeks of active duty. Activities of the 785th included stress management and mobilization pre-deployment briefings for service members and their families; childrens' support groups; individual and family counseling; consultation with unit commanders; and stress management seminars. Members of the stress management teams telephoned families to see how they were coping and to provide information on available services. After the war ended, reunification seminars were conducted to ease the transition of both the soldiers and their families back into "normal" life. The 785th conducted unit debriefings upon request to give soldiers a chance to talk about their experiences but also to learn how to handle future mobilizations. The 785th Detachment dealt with 3,636 individual and family contacts during this period, and--along with other psychiatric detachments who worked on the home front--showed the value of this kind of support for the Army Family.¹⁵⁴

Mental health was a significant workload during the War with Iraq. Harsh environmental conditions and uncertainty contributed to problems during the build up, and anticipation of combat increased stress during the air war and the preparations for the ground war. During the build up and preparations, there were more mental health problems in support units than combat units. While the combat units were busy training intensively for the ground war, the support units were working long hours with little sleep, performing support functions, and with few prospects for glory.¹⁵⁵ Most problems were handled by counselling and referrals. The combat stress teams were well received by unit commanders and chaplains--but not so well received by some physicians.¹⁵⁶

Mental health support during DESERT STORM was adequate for the problems that existed, for the quick victory, achieved with few casualties, eased stress considerably. If the combat phase had continued over a long period of time with more casualties, however, there would have been insufficient resources in the theater to have coped with the problems. The experience of DESERT STORM also shows the desirability of maintaining psychiatric detachments in peacetime at their full authorized strength of psychiatrists. PROFIS is an acceptable alternative.

Veterinary Services

The Veterinary Corps has two primary functions: food inspection and small animal care, primarily for military working dogs used for security purposes. These functions are performed by the Army in support of the entire Department of Defense.

Food inspection is an essential function to minimize food poisoning. Purchasing subsistence for the Armed Forces is the responsibility of the Defense Logistics Agency (DLA), and Army veterinary inspectors check DLA depots and supply points and the private contractors furnishing the food to DLA. During DESERT STORM there was an increased work load in CONUS. One problem was that the Reserve augmentation hospitals did not have veterinary personnel to backfill the AC veterinary personnel who were transferred to deploying units. This made it hard to take care of the expanding workload that accompanied the Reserve call up.

Veterinary operations in Saudi Arabia started on 12 August 1990 when two enlisted food inspectors of the 248th Veterinary Service Detachment arrived. In September, the Veterinary Staff section was established at ARCENT with Colonel Philip Alm as the Theater Veterinarian. Subsequently, the veterinarian strength in the theater built to a peak strength of 55 officers and 113 enlisted personnel in February 1991, as shown in Figure 25. About half the officers and most of the enlisted personnel were assigned to the veterinary units, but many veterinary officers were available also in Preventive Medicine Detachments, Civil Affairs units, Medical Headquarters, and the 3rd and 5th Special Forces Groups. Approximately two-thirds of the veterinary troop strength was from the Army Reserve.¹⁵⁷

The food inspection mission in Southwest Asia was to inspect all operational rations--MREs, Tray Rations, and B Rations--delivered to the theater, and inspect and approve all local sources of food as well. Veterinary inspectors visited all ration supply points to assure that the supply personnel were storing the rations properly in the heat and that older rations were used first. For some MREs, the extreme heat caused the cheese to turn brown and the peanut butter to separate but while this may not have been appealing, both were found to be wholesome.¹⁵⁸ In another case, inspectors in CONUS observed some lots of canned green beans that had a tendency to swell and notified the ARCENT Veterinarian so that inspections could be performed before the cans were issued to using units.¹⁵⁹ There was also some damage to B Rations either because of poor storage in CONUS, or incurred in shipping, and 30-40% of the B Rations on one ship were rejected by inspectors.¹⁶⁰ Despite some complaints that MREs caused diarrheal disease, there were no confirmed cases in which the MREs were found at fault.

Figure 25.

Veterinary Units & Personnel in Southwest Asia

Unit	Compo	Home Station	Off	Enl
73d Vet Det (Sm Animal)	AC	Fort Lewis, WA	1	4
248th Vet Services Det	AC	Fort Bragg, NC	1	9
320th Vet Services Det	USAR	Chicago, IL	2	5
356th Vet Services Det	USAR	Bronx, NY	6	20
358th Vet Services Det	USAR	Opelika, AL	1	4
422d Vet Services Det	USAR	Rockville, MD	6	18
423d Vet Services Det	USAR	Chicago, IL	1	4
449th Vet Det (Sm Animal)	USAR	Ames, IA	1	6
483d Vet Det (Sm Animal)	AC	Augsburg, Germany	6	24
888th Vet Det (Sm Animal)	USAR	Lexington, KY	1	4
Total Unit Strength			26	98

Veterinarians in Other Units

Type Unit	Off	Enl
Preventive Medicine Units	3	3
Civil Affairs Units	15	3
Special Forces Units	2	-
Medical Headquarters and Individuals	9	9

Total Veterinary Strength	55	113
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Inspection of commercial food suppliers was a big job because of the insistence of Lieutenant General William G. Pagonis, Commander of the 22nd Support Command, that the troops be fed fresh foods as much as possible.¹⁶¹ The normal procedure was for inspectors

to visit commercial purveyors before a contract was awarded, but since the King of Saudi Arabia was furnishing the food for the US forces in that country, the US Government did not award contracts for the food and had less leverage over the suppliers. By contrast, in Bahrain the US Government was purchasing the food, and the providers were quite eager to meet US standards. Food was already being delivered when the veterinary units arrived, and the task was to inspect as many of the sources as possible to bring the situation under some control. The inspectors had to visit dining facilities and find out the sources of the food and then inspect them. The inspections had to be pre-arranged to avoid offending local sensibilities, and there were problems in surmounting the language barrier and even finding the establishments. Because of concern about the experience level of some of the Army Reserve enlisted food inspectors, a training program was established under two experienced food inspection warrant officers to cover some details on inspection procedures and documentation.

By mid-January 1991, over 300 establishments throughout Saudi Arabia, United Arab Emirates, Qatar, Oman, and Bahrain had been inspected, with about 75% approved as sources of food. The US Embassy was notified of the establishments failing to meet US standards. A Directory of Sanitarily Approved Sources for local procurement of food was published every month and distributed to all organizations for their reference in obtaining food locally. There was some initial resistance to inspection of the commercial sources, and it was not until January 1991 that the situation was under control. In the interim there were few cases of food being turned back because it came from unapproved sources. During the operation, Army veterinarians inspected about 700,000,000 pounds of food in the course of 500 separate inspections, both initial and routine. Although there were numerous cases of illness traceable to bad food, there were no documented cases of illness traceable to food obtained from any establishment listed in the Directory of Sanitarily Approved Sources.¹⁶²

Initially, all veterinary operations were under the XVIII Airborne Corps, but in December, upon arrival of VII Corps, the organization was realigned as shown in Figure 26. Each corps was provided two small veterinary detachments, and the larger detachments were placed at EAC with the understanding that the corps could obtain extra help if needed. Veterinary units were aligned closely with Preventive Medicine units. Veterinary support to MARCENT was provided by three veterinary officers assigned to the 304th Civil Affairs Group. In January, the Saudi Arabian Contractor for food opened new warehouses at Dammam and KKMC, and veterinary units were located near these facilities for ease of inspection.

Veterinary small animal detachments were kept busy caring for 110 military working dogs used by the Army, Marine Corps, and Air Force at 22 different locations in the theater, plus nine British dogs. The dogs were used to detect explosives, as scouts, and as sentries. Of the total, 88 were used by the Air Force to assist in providing air base security. Most of the dogs were seen weekly and all at least monthly, and there were not serious animal diseases

during the operation. Other work was also found, for it was necessary to treat locally owned animals (at least one horse and three camels) injured as a result of US troop operations, and this required sometimes euthanizing animals that could not be treated successfully. Despite the official "no pet" policy, after the war there were many requests to support "mascots" and other animals picked up by the troops, but these requests were denied on the basis of the potential danger from disease carried by animals-- particularly the more exotic diseases that we did not want introduced into the United States.

The 423rd Veterinary Laboratory Augmentation team that deployed to the theater performed tests in a makeshift area at Eskan Village, Riyadh. Among other things, this unit sent the heads of a number of animals suspected of rabies to the Medical Laboratory in Germany for definitive testing.

The food inspection mission of the Veterinary Corps ties in closely with the general preventive medicine efforts of the Army Medical Department--an activity that was particularly important during DESERT STORM.

Figure 26.

Veterinary Organization in Southwest Asia

Echelons Above Corps

3rd MEDCOM: Veterinary Officer: Col Alm

320th Vet Det: Col Trask (Riyadh)

356th Vet Det: Col Nyteh (Dammam)

422nd Vet Det: Col Wesson (KKMC)

483rd Vet Det: Maj Gaiser (Dhahran)

888th Vet Det: Cpt Martin (KKMC)

Air Force Units (3 Veterinarians)

423rd Vet Det: LTC Platt (Laboratory) (Riyadh)

12th Med Det (PM): Maj Wardrip

Figure 26. (Continued)

VII Corps

332nd Medical Brigade: Veterinary Officer: Col Taylor

127th Med Gp (PM): Col Davis (ARNG)

358th Vet Det: Major Floyd (LogBaseA)

449th Vet Det: Maj Schurhammer (LogBaseA)

14th Med Det (PM): Col Main

XVIII Abn Corps

44th Medical Brigade: Veterinary Officer: LTC Dutton

73rd Vet Det: Cpt Schultheiss Dhahran

248th Vet Det: Cpt Martinez Dhahran

74th Med Det (PM): Cpt Carrol

Preventive Medicine

Although Saudi Arabia was a hostile environment because of the heat, the insects, the food and water, and disease, there was little incidence of disease because of a lack of preventive medicine. Environmental and preventive medicine detachments worked with the units to mitigate the dangers of the local environment and to keep the troops healthy and safe. The organization of preventive medicine units in Southwest Asia is shown in Figure 27.

Figure 27.

Organization of Preventive Medicine Units in Southwest Asia

Unit	Compo	Home Station
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Echelons Above Corps

12th Preventive Medical Det	USAR	Beloit, WI
714th Entomology Detachment	AC	Fort Bragg, NC
105th Environmental Engr Det	AC	Fort Lewis, WA
983d Preventive Medicine Det	USAR	Fort Snelling, MN

VII Corps

14th Preventive Medicine Det	USAR	Springfield, MO
48th Environmental Det	AC	Fort Riley, KS
71st Environmental Det	AC	Grafenwohr, Germany
223d Environmental Det	AC	Fort Carson, CO

XVIII Airborne Corps

74th Preventive Medicine Det	AC	Fort Benning, GA
227th Epidemiology Det	AC	Fort Lewis, WA
61st Environmental Det	AC	Fort Campbell, KY
224th Environmental Det	AC	Fort Hood, TX
926th Environmental Det	AC	Fort Benning, GA

Both the 12th and 14th Preventive Medicine Units were reconfigured into a headquarters (command and control) element of three Environmental Sanitation Detachments. This reconfiguration mirrored the Active Component structure and allowed for more flexible deployment and utilization, since each detachment could be located at separate sites to provide preventive medicine support services.

The 12th Preventive Medicine Detachment, an Army Reserve unit from Beloit, Wisconsin, commanded by LTC Valentine, arrived in Saudi Arabia on 10 December 1990 with 65 personnel. The unit had mobilized at Fort McCoy, Wisconsin, on 24 November 1990 and had received enough equipment for their full authorization of 144 personnel, so it was necessary to select out those items to be taken for their reduced deployment strength. The 12th tested water quality at several local water bottling plants, checked sanitation systems at the EPW camps, and tested air quality at vehicle painting shops and near the oil well fires in Kuwait.¹⁶³

The 983rd Medical Detachment, an Army Reserve Unit from Fort Snelling, Minnesota, commanded by Lieutenant Colonel William J. Phillipsen, MSC, was called to active duty in November 1990 and arrived in Saudi Arabia on 12 December with two officers and seven enlisted personnel.¹⁶⁴ It was located at Dammam until 5 January 1991 when it relocated to Khobar Village, Dhahran, where it stayed until it returned to CONUS on 26 May 1991. The mission of the 983rd was to "prevent food and water-borne disease caused by improper field sanitation practice."¹⁶⁵ The unit's job involved inspecting mess halls, latrines, showers, water points, unit areas, and other food establishments for cleanliness and proper sanitation. It found numerous violations that required corrective action, including insect problems, drainage problems, raw sewage in drains, torn screens, dirty latrines, missing doors on latrines, unsafe drinking water, dirty trash dumps, and rats. The detachment instituted training programs for representatives of over 84 troop units on the fundamentals of field sanitation. Another function was to provide entomological services--sprayers and pesticides--for the control of insects, including flies, fleas, mosquitos, lice, and rodents. Testing of water supplies was a continuous task, and a list of approved sources of potable water was distributed weekly. Lack of refrigeration was another source of disease in the hot climate, and 983rd inspectors checked the refrigerators and other food storage areas in mess halls and ration issue points. The 983rd paid particular attention to the AFEES mobile food stands and Wolfmobiles providing fast food for the troops, and made suggestions on menus and food preparation. In one case, 983rd inspectors found a compound where a large population of rats and cats and poor practices for storing food, trash, and garbage led to an infestation of fleas. One inspection of the Khobar Towers housing area found numerous violations of sanitation due to poor care with trash. In one of several similar cases, a severe outbreak of diarrhea was traced to a local national fried chicken restaurant whose sanitation was poor, and the restaurant was placed off-limits until the unsatisfactory conditions were corrected.

Another aspect of preventive medicine oversight was establishing the immunizations and preventive medical supplies needed by the troops in the theater. All troops entering Saudi Arabia were required to have current shots for typhoid, tetanus/diphtheria, and hepatitis (gamma globulin), while immunization for meningococcus, polio, and influenza were recommended but not required. All personnel were required also to take chloroquine as a prophylaxis against malaria in certain areas of the theater. A negative HIV test within the previous 24 months was

also required. Recommended personal and medical supplies included anti-diarrheal medications, bed nets, iodine tablets, medicated foot powder, sanitary napkins, condoms, protective goggles, sunglasses, lip balm, sunscreen, insect repellent, and paper or cloth masks to protect against blowing sand. A long list of chemical protective items were also included on the list of medical supplies to be available. The variety and number of these supplies suggest the complexity of the preventive medicine task.¹⁶⁶

For preventive medicine troops, life in Saudi Arabia truly was just one darned thing after another, but no matter how tedious or sometimes even unappreciated the work, the value of preventive medicine was demonstrated in the relatively low incidence of disease reported.

Although the list of violations found by the inspectors was formidable and appears to indicate a gross lack of appreciation by the troops for field sanitation, the results show otherwise. On three prior annual training exercises in the same general area, the patient load measured in outpatient visits per day per 1000 troops averaged about 35, but for DESERT SHIELD it was 6.5, and for DESERT STORM, only 2.5.¹⁶⁷ Another indication of the success of the preventive medicine effort is shown in Figure 28, which compares the patient admission rates for recent US wars.¹⁶⁸ These data indicate that disease and accidents were much less debilitating in this operation than in previous military operations, in part because the intrepid inspectors of the preventive medicine detachments were doing their jobs and the troop commanders listened to them on matters of field sanitation. As well, the lack of alcohol intake by the soldiers, over such a protracted period, is thought to have had a significant ameliorating effect on non-battle casualty rates.

Figure 28.

Army Disease/Non-Battle Injury Rates for Recent Wars
(Patients Admitted/1000 soldiers/day)

World War II (Middle East)	1.98
Korean War	1.67
Vietnam War	0.89
Desert Shield	0.34
Desert Storm	0.40

Challenges and Opportunities

Two general impressions emerge from this story of Army Medical Department Reservists during the War with Iraq.

The first impression is the great dependence of the AMEDD on Reservists and National Guardsmen to accomplish the medical mission. A mere glance at the Task Organization in the Appendix, in which Guard and Reserve units are shown in bold face, indicates the extent to which RC units were necessary to round out the VII Corps and EAC medical structures. The Active Army was really able to field only one corps' worth of medical support. The narrative indicates the degree to which RC physicians, nurses, medical technicians, and administrators were required to flesh out AC medical treatment facilities in CONUS, Europe, and Southwest Asia.

The second impression is that there were many problems between AC and RC military personnel in the AMEDD--probably more than in other functional areas of the Army, and certainly more than in other areas covered in this series of historical case studies on The Army Reserve in DESERT STORM. It is not clear why this is the case, and given the first impression of great dependence on the RC, the second impression of lack of unity is all the more startling. There are three general areas that provide both challenges and opportunities as the AMEDD faces the future: issues relating to integrating the AC and RC in AMEDD; the way AMEDD Reservists feel about their experience, and finally the sad state of readiness of RC medical units prior to the war. Resolution of problems in these areas is needed to support redefinition of the structure and process for delivering quality medical support to the Army in the future.

Total AMEDD Issues

The almost complete integration of AC and RC medical personnel during this operation caused friction and complaints from both groups, as illustrated by the following typical comments. Reservists serving in Germany had the feeling that they were "treated as second class citizens because they were Reservists."¹⁶⁹ Reservists serving in a major MEDDAC in CONUS thought that it was "obvious that many active duty soldiers and members of the permanent civilian staff have resented the presence of the RC soldiers."¹⁷⁰ An AC officer at Fort Leonard Wood told an RC nurse that he wished that "you [Reservists] had been sent to Saudi and our nurses kept here."¹⁷¹ Despite command emphasis on integrating the AC and RC in AMEDD, the problem was widespread.

Treatment of the Reservists by the AC varied from rewarding to miserable, depending on the duty location and the leadership found in the RC unit, the AC medical facility commander, and the AC installation commander. In some locations, the Reservists thought they were treated poorly, and were not given real work to do because the AC personnel thought the Reservists were unqualified. Shoulder patches and ID cards became emotional issues. In one hospital, Reservists were made to wear a distinctive ID badge with an orange stripe identifying them as Reservists, and this was thought by them to point up their second class citizenship status. In another hospital, however, the Reservists themselves opposed taking off their Reserve patch and putting on the AC patch. Almost all Reservists resented having their units broken up and being cross-leveled into medical treatment facilities in CONUS and--particularly--Europe.

Reservists perceived that the AC personnel for whom they were working had little understanding of Reserve matters, and that their pay, promotions, and awards were handled poorly or not at all. Their treatment showed a complete lack of sensitivity about the problems of a citizen soldier. In February 1991, 130 medical personnel--all health care providers--were called up from the 30th Hospital Center, USAR, Chicago, Illinois, as individual fillers. These personnel were given 48 hours to report to Fort Sam Houston, Texas, so they quit their jobs and arranged for their practices only to be told not to report for another six days, and finally they were not even sent to Saudi Arabia but were used in CONUS.¹⁷² This kind of insensitivity to the civilian medical responsibilities of Reservists is a frequent complaint from AMEDD Reservists.

Reservists believe that many AC personnel took advantage of them to pursue selfish interests. In Germany, one group of newly arrived Reserve physicians were made to work at the medical treatment facilities while the AC physicians they were supposed to augment took Christmas vacation.¹⁷³ After the war was won, some AC commanders in CONUS extended Reservists on active duty deliberately to allow returning AC personnel to take leave, infuriating Reservists who were in a hurry to get back to rebuild their practices and recover their losses.¹⁷⁴ Three AC preventive medicine detachments were sent home from Saudi Arabia in March 1991, while a Reserve detachment had to stay until May.¹⁷⁵ Again, this is a persistent theme in Reserve complaints.

Housing was also a frequent cause of complaint. Many Reservists felt they were discriminated against by being billeted in the "Reserve Barracks"--substandard housing. Reserve doctors serving in Germany complained that they were placed in poor quarters at lower rates of per diem, while AC staff officers stayed in better accommodations.¹⁷⁶ Reserve officers in CONUS noted that because of the way in which their orders were published, some officers had BOQ rooms with microwave ovens, cable TV, and free maid service, while others had no microwaves, no TV, and had to pay for maid service--in the same building. Many RC officers had to move as many as three times before getting a permanent room.¹⁷⁷ These complaints

were true initially due to lack of housing and a definite lack of planning by the HSC medical treatment facilities for a large influx of Reservists. Most of the quarters housing AC medical personnel were still occupied, if not by the AC person, then by the family of that person. So completely new quarters had to be obtained for the Reservists. Because of the tenant status of the HSC medical treatment facilities, obtaining housing for the incoming Reservists depended on the good will and resources of the post commander, who had a different set of priorities and problems. This problem was eased by the use of contracts with nearby motels and by authorizing Reservists to live in the local communities.¹⁷⁸

Typical of the petty rules confusing and irritating Reservists was the initial prohibition against bringing private automobiles to their duty stations in CONUS. The Reservists were billeted either in remote old barracks or off-post, and they needed their cars to get to work but ran into outmoded policies that took some time to get changed.¹⁷⁹ Reservists in Germany, understandably without private vehicles, found it hard to get transportation to take them to and from work.

Relative seniority could have been a bigger problem than it turned out to be--primarily because people worked together. It was not uncommon for the chief of surgery at a medical treatment facility, an AC lieutenant colonel, to have an RC full colonel working for him or her. This kind of rank reversal was handled on a case-by-case basis and usually did not cause trouble. For one thing, the younger AC physicians or nurses were often more current in the latest military matters than some of their older RC colleagues, and even more current in certain medical matters.¹⁸⁰ There are accounts of Reserve nurse lieutenant colonels expected to work for Active Component nurse lieutenants--not a good situation for either nurse. Nevertheless, professional respect and courtesy helped ameliorate these difficulties and kept them from becoming major problems or detrimental to operations.

In Southwest Asia, the frequent practice of using Guard and Reserve units to fill or augment Active Component units was distasteful to many Reservists. The integration of the 980th MEDSOM into the 47th MEDSOM was cited by one Reservist as a case in which the active leadership did not consult or even inform the Reserve leaders about what was going on, but used the Reserve enlisted personnel as fillers.¹⁸¹ The commander of the 482nd Medical Maintenance Detachment thought that his unit should have been allowed to retain its identity instead of being absorbed by the 428th MEDSOM.¹⁸² One entire hospital, lacking equipment, was simply disbanded with the personnel reassigned to other units as fillers.

Command and control was another touchy issue. In many cases RC hospital commanders expected to assume command of the medical facility, but had to settle for being deputies to AC officers who were left behind--and in many cases frustrated by not deploying. This led in some cases to friction between AC and RC personnel. In other cases, however, the two components

integrated well into a Total Army operation. Fitzsimmons Army Medical Center, Denver, Colorado, is an example of a facility at which the RC hospital was co-located with the AC unit it would augment, and at which the problems of pay, personnel, and privileging found at some other locations were minimal.¹⁸³

The biggest problem for all personnel was the continuous change, continuous movement, and the continuous cross-leveling that took place. This caused great anxiety and disrupted any cohesion that the RC medical units might have achieved during pre-war training. In many cases the individuals were "homeless" because neither their parent unit nor the new unit took care of them.

Some of the complaints of AMEDD Reservists can be dismissed as "whining" or "griping," but not all. Most of the problems boil down to just plain poor troop leading procedures on the part of commanders and a lack of basic military courtesy on the part of AC medical personnel. Since many of these complaints are so trivial, the question is: why the AMEDD leadership permitted this kind of treatment of people upon whom they were relying to take care of Army patients. A post-war survey of AMEDD Reservists underscores their discontent at the way they were treated.

One problem showing up regularly with AMEDD Reservists in Operation DESERT STORM, probably due to the large number of females in this group of personnel, is the severe impact of mothers longing for their children. As might be expected, this gets worse, even debilitating, as time goes on. Several USAR medical units visited during the research phase of preparing this monograph, reported how widespread the problem was. Young mothers who were RNs and LPNs suffered severe morale problems, and they were away from home only a short time. CW4 Max Cushman, the Personnel Officer of the 44th General Hospital in Madison, MI (and peacetime Senior Supervisory Administrator) explained that while Family Care Plans look good on paper, young mothers paid little pre-mobilization attention to them because they never believed they would be mobilized, and situations did not work out as planned. In general, husbands cannot take care of children, a house, family requirements, etc. over a protracted period because of their own job situations and other circumstances. The young mothers get letters from home outlining all the problems and complaints. Coupled with the natural yearning for their children, this wears on them after awhile, because they are scared, and lonely, and tired, and don't really know what's going on at home.¹⁸⁴ This has real portents for the future, especially in longer commitments than Operation DESERT STORM. Some commanders and staff officers in the AMEDD believe the Army should be aware of this phenomenon and use common sense in its recruiting efforts, no matter what equal opportunity objectives are espoused.

Impact of the Call up on AMEDD Reservists

The call up of AMEDD Reservists had some unsettling effects on them. There was frustration on the part of RC medical personnel because many of them really did not expect ever to be called up, and their pre-war expectations of what would happen in a call up were not met. Figure 29 shows resignation requests by AMEDD Reserve officers for three years.¹⁸⁵ The high rate for FY89 reflects an involuntary muster that year of IRR personnel and special efforts by ARPERCEN to remind Reservists of their obligation to respond to a mobilization. The rate for FY90 reflects "normal" attrition. The rate for FY91 reflects the losses stimulated by the call up for DESERT STORM. While the FY91 resignation requests were numerous, they represented only 3½% of the total number of AMEDD officers in the Ready Reserve.¹⁸⁶ Nonetheless the figures for Medical Corps and Nurse personnel are extremely high, considering STOP-LOSS was in effect for much of FY91.

Figure 29.

Resignation Requests by AMEDD Reserve Officers

Corps	FY89	FY90	FY91
Nurse Corps	220	82	429
Dental Corps	115	28	115
Medical Corps	198	99	435
Medical Service Corps	149	45	68
Physician Assistants	7	4	11
Medical Specialist Corps	16	4	11
Veterinary Corps	18	6	4
Total	723	267	1,076

Additional insight into the reaction of AMEDD Reservists to the experience of DESERT STORM comes from a survey conducted by Health Services Command after the war.¹⁸⁷ While there were many points of satisfaction in the responses, there were also three major points of dissatisfaction: unit fragmentation; poor communication; and financial loss.

Satisfactions. Most Reservists wanted to serve their country and believed that they contributed to the war effort. Those whose skills were utilized well and who were given

responsibilities commensurate with their rank and experience tended to be satisfied with their service. One-third reported a strong sense of being members of the Total Army Team. For the 60% of the responders who were married, strong support from their families was a major factor in making the mobilization a positive experience. Spouses had a key impact on both satisfaction and decisions to remain in the Army Reserve.

Unit Fragmentation. Nearly one-third of the respondents had a strong negative reaction to the fragmentation of their units upon mobilization. This destroyed unit cohesion, weakened the credibility of the Army and amounted to "broken promises." Mobilizing without senior NCOs and unit administrative personnel weakened the support of the mobilized Reservists and contributed to mishandling and poor support by AC personnel "who did not understand the nuances of the Reserve systems." Reassignment of individuals away from their own units led to a sense of separation from comrades and produced an increase in personnel, pay, and billeting problems. Reservists--particularly junior enlisted persons--used as filler personnel for deploying units experienced the worst problems associated with the mobilization.¹⁸⁹ Visits to USAR units which mobilized and interviews with key personnel in these units confirmed the negative reactions noted in the survey.

Poor Communication. Lack of timely information was a source of concern to many Reservists, who felt that they were insufficiently informed by both their parent Reserve units and the AC installations and units to which they reported. Lack of information was perceived by many Reservists as evidence that the Army was "blind to their needs and cared little about them."¹⁸⁹ On the other hand, Reservists who were provided timely and accurate information responded well to the mobilization. They felt well prepared and thought they contributed to the mission. More communication from the parent units also translated into better support from both the parent units and the installations.

Financial Loss Many health care providers, particularly physicians, suffered appreciable financial loss because of the mobilization. Solo practitioners had high rates of bankruptcy and business failure because after they referred their patients to other providers, laid off employees, and terminated leases, they found it hard to recover the patients and the other arrangements when they returned from the war. Those in partnerships returned to disgruntled partners tired of carrying the entire load.¹⁹⁰ While on active duty, Reservists often received less compensation than their AC counterparts (although the reverse was also true in some cases). The first concern of Reserve physicians usually was the cost to them of maintaining malpractice insurance to cover them while they were on active duty for work performed prior to that time. Physicians found themselves getting \$4,000 a month in military pay while having to pay out \$5,000 a month to keep themselves protected against malpractice litigation.

Many Reserve physicians had joined the CONUS augmentation hospitals with the informal understanding that upon mobilization, they would serve near their homes, be able to see their families, and keep an eye on their civilian practices. However, as the Army sought to balance supply and demand for medical specialties, they were moved to different locations. These unanticipated transfers invalidated family plans that had been based on the pre-war promises that they would be working at a single, often near-by location. They also made it impossible to keep civilian practices going on a part-time basis. Army regulations that prohibited Reserve physicians from seeing private patients even when they were near their homes were another source of dissatisfaction.¹⁹¹ Some physicians were able to do work outside of the Army, and special "moonlighting rules" had to be devised for these. Similarly situated, although in less numbers, were dentists. In a few instances where it was possible, at Fort Lewis, WA for example, the DENTAC Commander did allow dentists with private practices in the nearby area, to see patients on a part-time basis evenings and weekends, if they applied for that privilege. This assisted patients in continuing care regimens and allowed dentists to keep their practices afloat. A further assist was provided by the Dental Association in Washington, which provided volunteers to keep their mobilized colleagues' practices going while they were mobilized and deployed. Dentist friends also helped.

After the mobilization was underway, fast action by Congress to equalize pay and benefits between the AC and RC health care professionals helped ease the problem. Initially, the RC physicians on active duty received less pay than their AC counterparts, but remedial legislation that had been rejected by Congress in December 1990 was finally passed in January 1991 and made retroactive to August 1990. This same legislation also provided coverage for malpractice suits brought against Reserve Component doctors.¹⁹²

Despite what they perceive as poor treatment, however, most AMEDD Reservists thought they did a good job and contributed to the victory. While there were problems, the work was rewarding, and, contrary to the pessimistic predictions of massive resignations, most have elected to remain in the Army Reserve.

Reserve Medical Unit Readiness

After-action reports and the accounts of both AC and RC personnel indicate that the Reserve part of AMEDD was just not ready for the war. Partly this was the fault of the system, and partly it was the fault of the Reservists. Much of the problem was due to the major changes in the planning assumptions that affected HSC and the other parts of AMEDD, but that was not all of the problem. More than in other functional areas, the pre-war integration of AC and RC medical units and personnel was ineffective.

RC units were under equipped--deliberately. RC units were not authorized to stock narcotics, drugs, and other essential items for their missions, and the Army had a hard time supplying these items rapidly during the mobilization.¹⁹³ RC unit MTOEs authorized insufficient amounts and improper kinds of equipment. Equipment was often decades old and lacked items needed by surgical teams and laboratories. Augmentation hospitals did not have enough equipment, even to train on, to become effective.

Equipment problems were not noticed during peacetime, because many Reserve health care practitioners did not train with their units. In order to improve retention, health care providers were allowed to train in their medical specialties in civilian hospitals or attend medical conferences, leaving the units, tents, vehicles, and Army medical equipment to the MSC administrators and enlisted personnel. As a result, many RC health care providers did not know how to live in the field much less perform effectively in a military hospital in the field. Many had not even attended the Officers' Basic Course.

Even many of the RC augmentation hospital members, who knew that they would fall in on a fixed HSC hospital, were poorly trained for this mission. In many cases the TDAs of the augmentation hospitals were out of date, and there were mismatches between the RC unit's skills and the AC hospital's needs. With some exceptions, training was not well done, and there were severe misunderstandings between the AC hospitals and the RC augmentation units on what was going to happen when mobilization occurred.

Army Regulations had not been restrictive about matching medical areas of concentration to MTOE authorizations. Specifically, they allowed all AMMED officers, less those in Medical Service Corps, to be assigned to any position which required their branch. There were many anecdotes about a position calling for a particular specialty being filled by a person with another specialty. The surgeon's position in one Forward Area Surgical Team in the theater was filled by an obstetrician/gynecologist whose capability to perform live-saving definitive surgery would have been "unlikely."¹⁹⁴

Many Reserve nurses were not current in their specialties and had to receive refresher training. Some senior Reserve medical officers lacked recent "hands on" patient treatment experience that made it difficult to utilize them at all.¹⁹⁵ Senior grade enlisted personnel in MOS 91C (LPN) were not current in many cases. This unfortunate lack of attention to filling positions exactly may have been a well intentioned effort to keep health care providers on board (in the face of rigid unit strength and position controls), but it simply meant that the capabilities thought to be available from unit status reports were in fact not there.

Other failures were more general. Many Reservists lacked lens inserts for protective masks, lacked proper dental x-rays, lacked documented physical profiles, were physically unfit,

or had disabling medical conditions. Some medical Reservists came on active duty only to become patients themselves.¹⁹⁶ While these medical deficiencies applied to Reservists in general, they might have been reduced or eliminated by RC medical units prior to the mobilization if policies and restrictive regulations had allowed.

One of the single biggest problems faced by the mobilizing hospitals and detachments was the plethora of changes in guidance, procedures, and even the yo-yo effect of being alerted and called-up, then being cancelled or put on hold. These policy and administrative problems caused chaos in the individuals' lives, especially in those where individual practices and partnerships were critically affected by the absence of some of the business principals. At every level from CENTCOM to FORSCOM to CONUSA to ARCOM it was possible for change to be entered into the system, and when it was, as in the case of medical organizations, the whipsawing effect on individual Reservists and their employers, was pronounced and demoralizing. Many of these changes did not come through the operational chain of command, or even in writing. Units were reacting to phone calls from EOCs, Staff Medical Advisors, and so forth. The 176th Medical Brigade in Los Alamitos, CA, which had numerous subordinate elements activated, considered this to be the largest and most frustrating problem of the entire mobilization process.¹⁹⁷ Added to that was the further exacerbation of employers and business partners' frustrations by the incremental call-up, i.e. first 90 days, then a change to 180 days, then a change to a year's duration, making it difficult to do any business or workforce planning in an already down turned economy.

The most widespread demoralizing action to affect the AMEDD Army Reservists was the selective activation of individuals by derivative UIC, or the breaking up of medical units at mobilization stations, or upon arrival at the mission location, and the utilization of the personnel as cross-levelers in other units or as individual theater replacements. These circumstances have been reported as devastating to morale and the single largest disincentive to continued service in the Army Reserve. The feeling of not "belonging to anything", and the lack of security attendant to leaving one's friends and colleagues in a unit, and going to serve elsewhere at a critical time, when anxiety levels are already high, was too much for many to adjust to easily. This widely practiced process must be better explained and personnel indoctrinated to its advantages, before it is adopted as standard procedure.

Another RC failure was in credentialing. Obtaining permission for physicians to practice was a time consuming and laborious process that should have been done beforehand. Yet, in many cases professional credentials were not current and in the wrong format.¹⁹⁸ RC commanders simply did not do what the regulations required, and their readiness suffered as a result.

The AMEDD Reservists were individually well qualified, enthusiastic, and willing to

serve. They were themselves not well served by well meant but unsuitable policies, inadequate funding, and commanders--both AC and RC--that allowed them to be unready when the time came, as it did in the Fall of 1990. This has been noticed, and remedial actions are underway to correct the problems noted.

Some Good News

Despite all of the problems, however, it has to be said that the job was done. Medical treatment facilities in HSC did treat their patients without a loss of coverage during the entire mobilization period. Thousands of soldiers were processed medically for mobilization and deployment. Hospital beds in CONUS and Germany were ready to receive the expected battle casualties. In Southwest Asia, a theater medical structure was ready to go when the ground war started. Those American soldiers, sailors, airmen, and Marines who were wounded, injured, or sick were treated rapidly and effectively, along with hundreds of Iraqis, Kuwaitis, and Saudis. The system worked.

And one key to the success of the Army in providing medical care during Operation DESERT STORM was the flexibility and adaptability of Army medical units and personnel, particularly the RC medical units and individuals that were used in a manner for which they had neither been organized nor trained, but came through.¹⁹⁹ Despite all of the problems--self-inflicted and otherwise--that were encountered, the physicians, nurses, medical technicians, medical administrators and other members of the Army Reserve and Army National Guard in the Army Medical Department worked hard alongside their Active colleagues, and did the job.

Army Medical Department Reservists
in CONUS, Europe, and Southwest Asia

Appendix

Medical Task Organization in the Southwest Asia Theater
As of 19 January 1991

Notes on Task Organization

1. This task organization is based on information furnished by the Office of the Surgeon General, cross-checked with a task organization furnished by the Third Army Surgeon for 2 January 1991.
2. The major change in task organization between 2 January and 19 January 1991 was the reassignment of units subordinated to the 30th Medical Group in VII Corps, to other group headquarters, and the assignment of the 30th Medical Group Headquarters to augment the 332nd Medical Brigade Headquarters. There were additional changes to task organization during the ground campaign.
3. Army National Guard and Army Reserve units are shown in bold face type.
4. Hospitals located at Host Nation Facilities are indicated with asterisks (*).

Medical Task Organization

As of 19 January 1991

Echelons Above Corps

3rd Medical Command Headquarters

AC

566th Medical Company HHD

AC

Landstuhl, GE

45th Air Ambulance Company

AC

Nellingen, GE

173rd Medical Group Headquarters

USAR

Chicopee, MA

8th Evacuation Hospital

AC

Fort Ord, CA

663rd Surgical Det

ARNG

Nashville, TN

85th Evacuation Hospital

AC

Fort Lee, VA

420th Orthopedic Det

USAR

San Antonio, TX

201st Evacuation Hospital

ARNG

Juanadiaz, PR

207th Evacuation Hospital*

ARNG

Detroit, MI

386th Neurosurgical Det

US/ :

Fort Totten, NY

47th Field Hospital

AC

Fort Sill, OK

300th Field Hospital

USAR

Wilkes Barre, PA

120th Medical Battalion

ARNG

Midwest City, OK

675th Dispensary Det

AC

Fort Benning, GA

129th Clearing Company

ARNG

Mobile, AL

216th Ambulance Co

ARNG

Lake Villa, AZ

348th Helicopter Amb Det

USAR

Orlando, FL

872nd Helicopter Amb Det

USAR

Lafayette, LA

202nd Medical Group Headquarters

ARNG

Jacksonville, FL

129th Evacuation Hospital*

USAR

San Diego, CA

311th Evacuation Hospital*

USAR

Bismark, ND

365th Evacuation Hospital*

USAR

Niagara Falls, NY

Medical Task Organization

As of 19 January 1991

Echelons Above Corps (Continued)

<u>244th Medical Group Headquarters</u>	ARNG	Brooklyn, NY
50th General Hospital*	USAR	Fort Lawton, WA
423rd Laboratory (VS)	USAR	Chicago, IL
996th Laboratory	USAR	Chicago, IL
316th Station Hospital*	USAR	Harrisburg, PA
889th Surgical Det	USAR	Richmond, VA
382nd Field Hospital*	USAR	Augusta, GA
467th Psychiatric Det	USAR	Madison, WI
357th Neurosurgical Det	USAR	Chicago, IL
144th Evacuation Hospital	ARNG	Salt Lake City, UT
217th Evacuation Hospital*	ARNG	San Antonio, TX
92nd Medical Battalion	USAR	Springfield, IL
17th General Dispensary	AC	Gelnhausen, GE
947th Clearing Company	ARNG	Las Animas, CO
134th Ambulance Company	ARNG	Washington, IA
336th Helicopter Amb Det	USAR	Stewart Field, NY
 <u>803rd Medical Group Headquarters</u>	 USAR	 Boston, MA
114th Evacuation Hospital	USAR	San Antonio, TX
251st Evacuation Hospital*	ARNG	Columbia, SC
181st Thoracic Det	USAR	Denver, CO
395th Orthopedic Det	USAR	Hempstead, NY
904th Neurosurgical Det	USAR	Columbia, MO
424th Laboratory	USAR	Chicago, IL
350th Evacuation Hospital	USAR	Canton, OH
108th Medical Battalion	ARNG	Chicago, IL
75th Dispensary Small	AC	Fort Meade, MD
914th Dispensary Small	AC	Augsburg, GE
477th Ambulance Co	USAR	Duluth, MN
812th Air Amb Co	ARNG	Pineville, SC
343rd Air Amb Det	USAR	Novato, CA
986th Air Amb Det	ARNG	Sandston, VA
 <u>2nd Dental Headquarters</u>	 AC	 Heidelberg, GE
122nd Dental Svc Det	AC	Frankfurt, GE
123rd Dental Svc Det	AC	Wurzburg, GE

Medical Task Organization
As of 19 January 1991

Echelons Above Corps (Continued)

<u>379th Blood Headquarters</u>	USAR	Folsom, PA
448th Blood Proc Det	USAR	Fort Des Moines, IA
<u>320th Veterinary Headquarters</u>	USAR	Fort Sheridan, IL
356th Veterinary Service Det	USAR	Bronx, NY
422nd Veterinary Service Det	USAR	Rockville, MD
483rd Veterinary Det Sm Animal	AC	Augsburg, GE
888th Vet Small An Det	USAR	Lexington, KY
12th Preventive Medicine Det	USAR	Beloit, WI
714th Entomology Det	AC	Fort Bragg, NC
105th Environ Eng Det	AC	Fort Lewis, WA
983rd Environ San Det	USAR	Fort Snelling, MN
<u>US Army Medical Materiel Center, Saudi Arabia (USAMMCSA)</u>		
47th MEDSOM Battalion	AC	Fort Hood, TX
980th MEDSOM Bn	ARNG	Sacramento, CA
249th Supply Team	AC	Fort Meade, MD
49th Medical Maint Det	AC	Fort Hood, TX
153rd Inv Cont Det	AC	Fort Detrick, MD
605th Blood Dist Det	USAR	Fort Des Moines, IA
655th Blood Storage	AC	Landstuhl, GE
145th MEDSOM Battalion	USAR	Texarkana, TX
402nd Inv Con Det	USAR	Chester, PA
220th Med Maint Det	USAR	Madison, WI

A Federal Force

Medical Task Organization

As of 19 January 1991

VII Corps

<u>332nd Medical Brigade Headquarters</u>	USAR	Nashville, TN
30th Medical Group Headquarters	AC	Ludwigsburg, GE
<u>127th Medical Group Headquarters</u>	ARNG	Ashland, AL
475th Mobile Army Surgical Hospital	ARNG	Frankfort, KY
912th Mobile Army Surgical Hospital	USAR	Johnson City, TN
31st Combat Support Hospital	AC	Pirmasens, GE
345th Combat Support Hospital	USAR	Jacksonville, FL
377th Combat Support Hospital	USAR	Chattanooga, TN
403rd Combat Support Hospital	USAR	Phoenix, AZ
217th Medical Battalion	ARNG	Aurora, CO
142nd Clearing Company	ARNG	New Haven, CT
730th Clearing Company	ARNG	Winner, SD
42d Ambulance Company	AC	Flak Kaserne, Germany
273rd Helicopter Amb Det	USAR	Conroe, TX
429th Medical Battalion HHD	USAR	Savannah, GA
209th Clearing Company	ARNG	Iowa City, IA
651st Ambulance Company	AC	Ludwigsburg, GE
507th Air Ambulance Company	AC	Fort Sam Houston, TX
<u>341st Medical Group Headquarters</u>	USAR	Seagoville, TX
115th Mobile Army Surgical Hospital	ARNG	Washington, DC
159th Mobile Army Surgical Hospital	ARNG	Jackson Ba, LA
807th Mobile Army Surgical Hospital	USAR	Paducah, KY
128th Combat Support Hospital	AC	Nellingen, GE
328th Medical Battalion HHD	USAR	Nashville, TN
138th Clearing Company	ARNG	Atlanta, GA
928th Ambulance Company	ARNG	Cortez, CO
146th Air Ambulance Company	ARNG	Parkersburg, WV
1267th Air Ambulance Co	ARNG	Jefferson, MO
316th Helicopter Amb Det	USAR	Elyria, OH
321st Helicopter Amb Det	USAR	Salt Lake City, UT
12th Evacuation Hospital	AC	Weisbaden, GE
318th Det Anesthesiology	USAR	Fort Snelling, MN
451st Surgical Det	USAR	Columbia, MO
114th Orthopedic Det	USAR	Los Angeles, CA
481st Maxillofacial Det	USAR	Cedar Rapids, IA
378th Neurosurgical Det	USAR	Memphis, TN

718th Neurosurgical Det USAR Folsom, PA

Medical Task Organization
As of 19 January 1991

VII Corps (Continued)

13th Evacuation Hospital	ARNG	Madison, WI
148th Evacuation Hospital	ARNG	Little Rock, AR
312th Evacuation Hospital	USAR	Greensboro, NC
410th Evacuation Hospital	USAR	Topeka, KS
818th Medical Battalion Headquarters	ARNG	Bismark, ND
120th Dispensary Small	AC	Erlangen, GE
928th Dispensary Small	AC	Heidelberg, GE
145th Clearing Company	ARNG	Broken Arrow, OK
343rd Ambulance Company	USAR	Galax, VA
236th Air Ambulance Company	AC	Landstuhl, GE
1022nd Air Ambulance Co	ARNG	Cheyenne, WY
87th Dental Service Det	AC	Nurnberg, GE
531st Psychiatric Det	USAR	Baltimore, MD
14th Preventive Medicine Det	USAR	Springfield, MO
48th Environmental Det	AC	Fort Riley, KS
71st Environmental Det	AC	Grafenwohr, GE
223rd Environmental Det	AC	Fort Carson, CO
358th Veterinary Service Det	USAR	Opelika, AL
449 Veterinary Small An Det	USAR	Ames, IA
428th MEDSOM Battalion	AC	Pirmasens, GE
484th Inventory Control Det	USAR	Kalamazoo, MI
482nd Medical Maint Det	USAR	Milwaukee, WI
387th Blood Distribution Det	USAR	Brooklyn, NY

A Federal Force

Medical Task Organization
As of 19 January 1991

XVIII Airborne Corps

<u>44th Medical Brigade Headquarters</u>	AC	Fort Bragg, NC
<u>1st Medical Group Headquarters</u>	AC	Fort Hood, TX
46th Combat Support Hospital	AC	Fort Devens, MA
47th Combat Support Hospital	AC	Fort Lewis, WA
34th Medical Battalion HHD	AC	Fort Benning, GA
440th Ambulance Company	AC	Fort Benning, GA
498th Air Ambulance Company	AC	Fort Benning, GA
36th Helicopter Amb Det	AC	Fort Polk, LA
57th Helicopter Amb Det	AC	Fort Bragg, NC
82nd Helicopter Amb Det	AC	Fort Riley, KS
690th Ambulance Company	AC	Fort Benning, GA
85th Medical Battalion HHD	AC	Fort Meade, MD
274th Surgical Det	AC	Fort Bragg, NC
517th Clearing Company	AC	Fort Carson, CO
547th Clearing Company	AC	Hunter Army Air Field, NC
595th Clearing Company	AC	Fort Devens, MA
702nd Clearing Company	AC	Fort Meade, MD
<u>62nd Medical Group Headquarters</u>	AC	Fort Lewis, WA
2nd Mobile Army Surgical Hospital	AC	Fort Benning, GA
10th Mobile Army Surgical Hospital	AC	Fort Carson, CO
15th Evacuation Hospital	AC	Fort Polk, LA
44th Evacuation Hospital	USAR	Oklahoma City, OK
93rd Evacuation Hospital	AC	Fort Wood, MO
567th Maxillofacial Det	USAR	Bellmore, NY
368th Neurosurgical Det	USAR	San Antonio, TX
252nd Thoracic Det	AC	Fort Meade, MD
273rd Maxillofacial Det		Not Available
359th Neurosurgical Det	AC	Fort Benning, GA
250th Orthopedic Det	AC	Fort Meade, MD
109th Evacuation Hospital	ARNG	Birmingham, AL
36th Medical Battalion HHD	AC	Fort Devens, MA
514th Ambulance Company	AC	Fort Devens, MA
565th Ambulance Company	AC	Fort Polk, LA
374th Helicopter Amb Det	USAR	Little Rock, AR
347th Helicopter Amb Det	ARNG	Miami, FL

Medical Task Organization
As of 19 January 1991

XVIII Airborne Corps (Continued)

5th Mobile Army Surgical Hospital	AC	Fort Bragg, NC
786th Surgical Det	USAR	San Antonio, TX
28th Combat Support Hospital	AC	Fort Bragg, NC
41st Combat Support Hospital	AC	Fort Houston, TX
86th Evacuation Hospital	AC	Fort Campbell, KY
528th Psychiatric Det	AC	Fort Benning, GA
60th Dispensary Det	AC	Fort Hood, TX
<u>56th Medical Battalion Headquarters</u>	AC	Fort Bragg, NC
36th Clearing Company	AC	Fort Bragg, NC
423rd Clearing Company	AC	Fort Lewis, WA
945th Dispensary Small	AC	Fort Bragg, NC
429th Ambulance Company	AC	Fort Bragg, NC
24th Air Amb Company	ARNG	Lincoln, NE
229th Air Amb Det	AC	Fort Drum, NY
431st Helicopter Amb Det	AC	Fort Knox, KY
212th Dispensary	AC	Fort Meade, MD
155th Epidemiology Det	AC	Fort Bragg, NC
257th Dental Service Det	AC	Fort Bragg, NC
74th Preventive Medicine Det	AC	Fort Benning, GA
227th Epidemiology Det	AC	Fort Lewis, WA
61st Environmental Det	AC	Fort Campbell, KY
224th Environmental Det	AC	Fort Hood, TX
926th Environmental Det	AC	Fort Benning, GA
73rd Veterinary Det Sm Animal	AC	Fort Lewis, WA
248th Veterinary Det Sm Animal	AC	Fort Bragg, NC
32nd MEDSOM Battalion	AC	Fort Bragg, NC
5th Spectacle Fabrication Det	AC	Fort Benning, GA
261st Medical Maintenance Det	AC	Fort Benning, GA
135th Blood Distribution Det	AC	Fort Bragg, NC
307th Medical Battalion 82nd Abn Division	AC	Fort Bragg, NC
326th Medical Battalion 101st AA Division	AC	Fort Campbell, KY

End Notes

1. Interview, Major Travis A. Everett, Training Officer, 3297th Army Hospital, 14 December 1992. The number of Reservists called up is from a GAO Report, "Operation Desert Shield: Problems Encountered by Activated Reservists," September 1991.
2. Interview, SFC Mary Ann Ruthrauff, 14 December 1992.
3. Major Everett, 14 December 1992.
4. Interview, SFC Ruthrauff, 14 December 1992.
5. Major Everett, 14 December 1992.
6. LTC Frederick E. Gerber, Chief, Current Operations, Office of the Surgeon General, 26 February 1993.
7. John R. Brinkerhoff, Trevor N. Dupuy, C. Curtiss Johnson, and Peter J. Clark, Handbook on Ground Forces Attrition in Modern Warfare, Historical Evaluation and Research Organization, Fairfax, Virginia, January 1986, pp 82-88.
8. Brinkerhoff, op. cit.
9. Colonel Gerald R. Moses, 13 October 1992. PROFIS itself included only officers, but a few enlisted personnel apparently were also preassigned to TOE hospitals under a Medical Filler System (MEDFIS).
10. LTC Ralph E. Bradford, 13 October 1992.
11. Interview, MG Max Baratz, DCG USARC, 13 August 1993.
12. This section is based on the description of Army Health Services Operation in Annex G, "Medical Support," Conduct of the Persian Gulf War, DOD Report to the Congress, April 1992, and information supplied by the Third Army Surgeon, March 1993.
13. LTC Gerber, 26 February 1993.
14. Operation Desert Storm Briefing.

15. LTC Bradford, Chief, Personnel Division, 26 April 1993. Military strength includes 21 AGR personnel.
16. Data provided by Carol Beardon, Resources Management Directorate, HSC, 26 April 1993. The data include Guardsmen and Reservists on full-time active duty as well as their dependents, but it does not include drilling reservists.
17. Data provided by Special Studies Branch, Directorate of Patient Administration Systems and Biostatistics Activities, Fort Sam Houston, Texas, 15 April 1993.
18. This section is based on interviews on 13 October 1992 with the following Health Services Command personnel: Colonel Gerald R. Moses, Reserve Advisor; Lieutenant Colonel Frank R. Cotten, Jr., Deputy Reserve Advisor; Dr. Alan B. Compton, Chief, Mobilization Division; LTC Donald Anderson, Mobilization Division, and LTC Ralph E. Bradford, Chief, Military Personnel Division.
19. Arthur H. Blair, At War in the Gulf: A Chronology, Texas A&M University Press, 1992, p. 15.
20. LTC Bradford, 13 October 1992.
21. LTC Bradford, 13 October 1992.
22. LTC Bradford, 13 October 1992.
23. Colonel Moses, 13 October 1992.
24. LTC Bradford, 13 October 1992.
25. Health Services Command, Operation Desert Shield/Storm After Action Report, 25 June 1991, pp 1-2 (hereafter HSC After Action Report). Additional data supplied by LTC Bradford, Chief, Personnel Division, 26 April 1993.
26. LTC Bradford, 13 October 1992.
27. LTC Bradford, 13 October 1992.
28. ALO stands for Authorized Level of Organization and is the strength authorized by the Army and funded in the budget for a particular unit as a percentage of full wartime strength (ALJ 1). ALO 2 provides about 90% and ALO 3 about 80% of full wartime strength.
29. HSC After Action Report, p 2.

30. HSC After Action Report, p 2.
31. Dr. Compton, 13 October 1992.
32. Health Service Command briefing, 20 November 1990.
33. HSC After Action Report, HSPE-M, Executive Summary.
34. HSC After Action Report, HSPE-MO.
35. HSC After Action Report, HSPE-MO.
36. HSC After Action Report, HSPE-MO.
37. LTC Chaney, NAAD, 15 March 1993.
38. Dr Compton, 3 October 1992.
39. Dr. Compton, 13 October 1992.
40. LTC Bradford, 13 October 1992.
41. HSC After Action Report, p. 3.
42. For purposes of comparison, the NATO War scenario called for 65,000 hospital beds in CONUS.
43. HSC After Action Report, p. 6.
44. HSC After Action Report, p. 4.
45. HSC Lessons Learned, Part II, p. 4. While the Army designated only 6 medical centers as primary casualty reception centers, the Navy and Air Force designated numerous hospitals of all sizes and capabilities.
46. HSC After Action Report, p. 5.
47. HSC After Action Report, HSOP-SP.
48. LTC Bradford, 13 October 1992.
49. LTC Bradford, 13 October 1992.

50. LTC Bradford, 13 October 1992.
51. Theodore S. Silva, Trip Report , "Visit to 88th ARCOM and Subordinate Medical Units," 25 January 1993. The 5501st believes that it got a bad reputation in the Reserve medical community because of the difficulties it had in administering its members during the mobilization.
52. Theodore S. Silva, Trip Report on Visits to Medical and Training Units in Wisconsin, 10 February 1993.
53. LTC Bradford, 13 October 1992.
54. This section is based on Walter Reed Army Medical Center After-Action Report, 1991.
55. Hqs, US Army Health Services Command, "Operation Desert Storm Lessons Learned," 22 April 1991, data on initial military strength and civilian strength obtained from Ms. Lynn Harper, Manpower Division, 22 April 1993.
56. HSC After Action Report, Appendix 2, Annex E, to HSC CONPLAN 9-90.
57. Only the 126th Medical Company was assigned to Health Services Command, and the rest were under USFORSCOM.
58. Colonel Moses, 13 October 1992.
59. LTC Bradford, 13 October 1992.
60. HSC After Action Report, RC, Other Medical.
61. Health Services Command, Information Paper, "Problems Incurred with both Credentials Review and Privileging During Desert Shield/Desert Storm," 14 February 1991.
62. HSC After Action Report, Personnel. Additional data provided by Ms Emelyn Wolters, Operations, AMEDD Center and School, 26 April 1993. Total OBC Reserve throughput was 3,102 for FY91, of which 7 were normal courses, and 6 were the expedited courses.
63. Dr. Compton, 13 October 1992.
64. LTC Bradford, 13 October 1992.
65. Much of this section is based on an interview with LTC John T. Robertson, 7th MEDCOM Planner, and LTC Michael J. Feeley, 7th MEDCOM Personnel Officer, at the Office of the Surgeon General, 26 February 1993.

66. Interview, COL Robert Griffin, VII Corps Surgeon during Operation DESERT STORM, 13 August 1993.
67. HSC After Action Report, HSPE-MO.
68. Silva, Trip Report, 10 February 1993.
69. Theodore S. Silva, Trip Report, "Report of Visit to HQ, 124th ARCOM and Subordinate Medical Units Activated for Operation DESERT STORM", 29 March 1993.
70. Briefing on Operation Desert Storm. These data represent the aggregate authorized strength of units in SWA--not the number of personnel, which may be greater due to cross-levelling and replacements.
71. Interview with Colonel Demetrios Tsoulos, ARCENT Surgeon, 14 December 1992.
72. Colonel Tsoulos, 14 December 1993.
73. See Brinkerhoff, et al, Attrition Handbook, op. cit.
74. Memorandum for Record, LTC Deblois/LTC Wakefield, ARCENT Surgeon's Office, 21 November 1990.
75. Source of fatalities data is the Office of the Secretary of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, "Operation Desert Shield/Desert Storm Casualties," 19 February 1993. Army WIA and NBD data were obtained from DA Casualty Office, 23 April 1993. There is a slight discrepancy on KIA data between the Army (98) and OSD (94), and OSD lists two persons as died of wounds.
76. Colonel Tsoulos, 14 December 1992.
77. Operation Desert Storm Briefing.
78. Operation Desert Storm Briefing.
79. Information provided by Third Army Surgeon, March 1992.
80. Colonel Tsoulos, 14 December 1992, and Department of Defense, Appendix G, "Medical Support, Conduct of the Persian Gulf War, Final Report to Congress, April 1992. Henceforth, DOD Report to Congress.

81. Major Angel E. Cintron, 8 February 1993. Major Cintron was the chief of the DEPMEDS Fielding Team in the North and delivered DEPMEDS sets of equipment to 19 hospitals.
82. Colonel Tsoulos, 14 December 1992.
83. Colonel Tsoulos, 14 December 1992.
84. Colonel Tsoulos, 14 December 1992.
85. Colonel Tsoulos, 14 December 1992.
86. LTC Bernard J. Horak, PhD, COL Richard J. Williams, MD, and William H. Borton, MHA, "Preparations for War in a Saudi Arabian Host Nation Hospital," undated. Two of the authors were medical advisors to the SANG, and Mr. Borton was the administrator of the King Fahd National Guard Hospital.
87. Ibid.
88. Office of the Surgeon General, "After-Action Report for Operation Desert Shield/Storm Army Nursing Lessons Learned Conference, 9-10 July 1991," 23 August 1991.
89. Army Nursing Conference Report, op. cit.
90. Horak, Williams, and Borton, op cit.
91. Colonel Donald Trunkey, MC (MD), After Action Report, 5 Jun 1991. Doctor Trunkey was Chief of Professional Services for the 50th General Hospital. The efforts of the 50th General Hospital to establish a holding company away from the Saudi hospital at Eskan Village were disapproved by the 244th Medical Group.
92. Horak, Williams, and Borton, op cit.
93. Theodore S. Silva, "Trip Report, Visit to 88th ARCOM and Subordinate Medical Units," 25 January 1993.
94. Colonel Tsoulos, 14 December 1992.
95. Colonel Tsoulos, 14 December 1992.
96. This section is based on 217th Medical Battalion, "After Action Report - 217th Medical Battalion - Operation Desert Shield/Desert Storm," 14 March 1991, with added detail from Memorandum, 316th Medical Detachment (Hel Amb), "Operation Desert Storm," 14 January 1990. The organization shown in this section for the 217th differs from that shown in the

Appendix because the battalion was augmented for the combat phase.

97. Memorandum, 316th Medical Detachment (Hel Amb), "Operation Desert Storm," 14 January 1991.

98. This section is based on the 345th Combat Support Hospital, "DESERT STORM After Action Report (AAR)," 18 June 1991.

99. Information furnished by Third Army Surgeon, March 1993.

100. Theodore S. Silva, "Trip Report, Visit to 88th ARCOM and Subordinate Medical Units," 25 January 1993.

101. Trunkey, op. cit.

102. Office of the Surgeon General, "After-Action Report for Operation Desert Shield/Storm Army Nursing Lessons Learned Conference, 9-10 July 1991," 23 August 1991.

103. Theodore S. Silva, "Trip Report of Visit to Medical Units in CA and AZ, Assigned to the 63d ARCOM", 27 April 1993.

104. Colonel Tsoulos, 14 December 1992.

105. Information provided by the Third Army Surgeon, March 1993.

106. Colonel Tsoulos, 14 December 1992.

107. Colonel Tsoulos, 14 December 1992.

108. Telephone interview with BG Robert McFarlin, former Commander, 2d COSCOM, 10 September 1993.

109. BG McFarlin, 10 September 1993.

110. LTC Gilbert W. McIntosh, ACoS, Supply and Services, 332d Medical Brigade, statement dated 2 July 1993.

111. Colonel Robert F. Griffin, MC, LTC Howard A. McClelland, MS, and CPT George A. Fisher, AMSC, "Preparing and Organizing Medical Support to VII Corps: Operation Desert Shield and Storm," The Journal of the U.S. Army Medical Department, March/April 1992, p19.

112. Colonel Tsoulos, 14 December 1992.

113. Colonel Tsoulos, 14 December 1992. Selection of MC colonels for hospital command position started in November 1990.
114. Desert Storm Briefing.
115. Information furnished by Third Army Surgeon, March 1993.
116. Colonel Tsoulos, 14 December 1992.
117. Colonel Tsoulos, 14 December 1992.
118. William G. Pagonis, Moving Mountains, Harvard Business School Press, 1992, p. 148.
119. Colonel Tsoulos, 14 December 1992.
120. Colonel Tsoulos, 14 December 1992.
121. Colonel Tsoulos, 14 December 1992.
122. Colonel Tsoulos, 14 December 1992.
123. Colonel Tsoulos, 14 December 1992.
124. HSC Memorandum, HSDSI-R, "Replacement of Orthodontic Appliances Removed During Desert Shield/Storm," 28 February 1991.
125. HSC After Action Report, Dental.
126. Colonel James R. Fay, Office of the Assistant Surgeon General for Dental Services, 26 February 1993.
127. Commander David A. Reichman, PhD., Deputy Director, Armed Services Blood Program Office, 8 February 1993.
128. Commander Reichman, 8 February 1993.
129. HQs, USAHSC Blood Program Office, After Action Report, Undated.
130. HSC After Action Report, RC Other Medical.
131. HSC After Action Report, RC Other Medical.
132. HSC After Action Report, Logistics.

133. Telephone interview, LTC Richard Brown, Armed Services Blood Office, 23 February 1993.
134. JULLS Long Report, 32003-0633, CCSG-JBPO, 14 June 1991.
135. LTC Brown, 23 February 1993.
136. Commander Reichman, 8 February 1993.
137. JULLS Long Report, 32005-75306, CCSG-JBPO, 14 June 1991.
138. Appendix G, DOD Report to Congress, op. cit.
139. HSC After Action Report, HS Logistics, Resource Management.
140. HSC After Action Report, p. 3.
141. HSC After Action Report, Logistics.
142. Appendix G, DOD Report to Congress, op. cit.
143. Colonel Philip E. Livermore and Major Angel E. Cintron, "Desert Shield/Storm: A Medical Logistics Challenge," date unknown. The combined MEDSOMs approximated the newly devised Medical Logistics Battalion (Rear) proposed for adoption in the Medical Force 2000 structure.
144. Major Angel E. Cintron, MS, and Major George D. Magee, MS, "Medical Logistics Support to Desert Storm," The Journal of the U.S. Army Medical Department, September/October 1992, pp 35-38, with additional information supplied by Major Cintron, 8 February 1993.
145. Operation Desert Storm Briefing.
146. Appendix G, DOD Report to Congress, op. cit., and Livermore and Cintron, op. cit.
147. HSC After Action Report, Logistics.
148. HSC After Action Report, Logistics.
149. HSC After Action Report, p. 3.

150. Theodore S. Silva, Report of Visit to Reserve Medical Units in Wisconsin, 10 February 1993.

151. This section is based on information supplied by Colonel James W. Stokes, HSC, during a telephone interview on 16 February 1993, and additional material cited obtained directly from the units.

152. LTC Berrier was assigned to an Evacuation Hospital after leaving the 531st Detachment. LTC Robert Evans reports that four women psychiatrists in their 60s were assigned to the theater, including Colonel Virginia Sincaben, age 63, and that they performed well.

153. Major Keith Lane, 26 April 1993.

154. 785th Medical Detachment (Psy), "Desert Shield/Storm After Action Report," 29 October 1991.

155. Colonel Stokes, 16 February 1993.

156. LTC Robert Evans, 26 February 1993.

157. The section on Veterinary operations in Southwest Asia is based on several reports of the ARCENT Veterinary Staff Office and the After-Action Report of the 483rd Medical Detachment (VS), undated.

158. 483rd Medical Detachment (VS), After Action Report.

159. Letter, Defense Personnel Support Center, "Thermophilic Swellers in Tray Pack Modules," 7 Sep 1990.

160. ARCENT Veterinary Staff Officer, After Action Report for 14 Nov 90.

161. William G. Pagonis, Moving Mountains, Harvard Business School Press, 1992, pp. 113-115, gives an account of how Pagonis and his designated "food czar" Warrant Officer Wesley Wolf found a local contractor to feed the troops.

162. 483rd Medical Detachment (VS) After Action Report.

163. Silva, Trip Report, 10 February 1993.

164. This account is based on the Andrulis Research Corporation's Desert Shield/Desert Storm Questionnaire completed by the 983rd Medical Detachment, June 1991, and Silva, Trip Report, 25 January 1993.

165. 983rd Medical Detachment, Weekly Progress Report, 4 Jan 1991.
166. After Action Report, "Preventive Medicine Measures and General Preventive Medicine Information for Operation Desert Shield, undated.
167. Operation Desert Storm Briefing.
168. Data supplied by Operations Division, OTSG, March 1993. Data for earlier wars are for divisional troops, and the rates for non-divisional troops are slightly different but show the same trend.
169. John Seitz and Theodore S. Silva, "Trip Report, Visit to 30th Hospital Center, 8 March 1991.
170. USAMEDDAC, Fort Leonard Wood, op. cit.
171. Ibid. The evidence for AC-RC antagonism is anecdotal but massive, and supported also by survey results discussed in the paper. There were significantly more complaints about this issue from RC medical personnel than from any other functional area studied in the U.S. Army Reserve in the Operation DESERT STORM series of monographs.
172. Seitz and Silva, 30th Hospital Center, op. cit.
173. Theodore S. Silva, "Trip Report to Health Services Command," 10 March 1992.
174. Colonel Philip A. Snodgrass, MD, MC, USAR, Deputy Commander for Reserve Affairs, USAMEDDAC, Redstone Arsenal, 6 March 1991. Colonel Snodgrass overheard an AC MEDDAC commander planning this kind of maneuver on a conference call. Other reports substantiate this policy by some AC commanders.
175. Silva, Trip Report, 10 February 1993.
176. Seitz and Silva, 30th Hospital Center, op. cit.
177. USA Medical Department Activity, Fort Leonard Wood, MO, Memorandum for US Army Health Services Command, 8 July 1991.
178. LTC Bradford, 13 October 1992.
179. LTC Bradford, 13 October 1992.
180. LTC Bradford, 13 October 1992.

181. Lieutenant Colonel Dana Grau, 980th MEDSOM, "Observations On The Negative Relationship Between A National Guard Unit And An Active Army Unit During Operation Desert Shield/Desert Storm," 1 June 1991.

182. Silva, Trip Report, 10 February 1993.

183. Colonel Moses, 13 October 1992.

184. Silva, Trip Report, 10 February 1993.

185. "A Survey of Army Medical Department Reserve Personnel Mobilized in Support of Operation DESERT STORM." Hereafter, "Reserve Survey."

186. The DCSPER 46 Report for March 1992 shows 30,462 AMEDD officers in the Ready Reserve. Data furnished by LTC Arthur E. House, OCAR, 27 April 1993.

187. From April through June 1991, Health Services Command sent a survey instrument to mobilization stations and HSC facilities to be administered in group format to all available mobilized Reservists. Responses were obtained from 3,930 personnel of a possible total of over 20,000 Reservists mobilized. Demographic data indicate the sample is representative of the population. Eighty-eight percent of the respondents were from troop program units. Source is HSC documents on the Survey.

188. Reserve Survey, Introduction, p. 5.

189. Reserve Survey, Introduction, p. 6.

190. Reserve medical officers are now encouraged to have a "Business Care Plan" to make provision for patients and practices when mobilized.

191. HSC After Action Report, Part II.

192. LTC Bradford, 13 October 1992.

193. Hqs, 30th Medical Center, "Medical Unit Unique Desert Shield/Storm Problems - Logistics," 28 February 1991.

194. Trunkey, op. cit.

195. Walter Reed Army Medical Center After-Action Report.

196. Walter Reed Army Medical Center After Action Report.

197. Theodore S. Silva, "Report of Visit to Reserve Medical Units in the 63d ARCOM Area of California and Arizona", 3 May 1993.

198. Walter Reed Army Medical Center After-Action Report.

199. Colonel Moses, 13 October 1992.

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